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Summaries

The road ahead: transforming New Zealand ambulance (out-of-hospital) services

Dylan A Mordaunt

Ambulance services in New Zealand do much more than transport patients—they provide life-saving emergency care and often step in where other parts of the health system fall short. Despite this, they have never been legally recognised as an emergency service and remain underfunded, relying on donations and co-payments that create unfair gaps in access. Demand is growing fast, especially from older people, those with long-term conditions and people in mental health crises, leaving paramedics under strain. This paper argues that legal recognition must be paired with secure funding, fair pay, better rural services and stronger integration with mental health and hospital care, so that ambulance services can meet the needs of all New Zealanders in the future.

Drug harm prevention needs among adolescents in Aotearoa New Zealand: findings from the Youth19 Survey

Grace Sullivan, Jane Zhang, Luisa Silailai, Karen Wright, Emily Cooney, Michaela Pettie, Jude Ball

Many teens in Aotearoa are worried about their drug use—and want help to quit. New research using data from over 7,700 secondary students shows that young people, especially those using tobacco, often want to quit but many struggle to access support. Māori, Pacific, younger teens (under 16 years), LGBTQ+ youth and those in small towns, rural or socio-economically deprived areas are most affected. The findings highlight the urgent need for better prevention and early intervention where it's needed most.

Transfer of care and inbox management in primary care: a survey on medico-legal responsibility awareness and administrative burden in Aotearoa New Zealand

Albert Wu

Our survey aimed to evaluate primary care professionals' understanding and preferences in various aspects of transfer of care including their long-term career trajectory. It affirms that there is currently a medico-legal knowledge gap present in our primary care workforce. While it does not seem to affect clinicians' time spent on non-patient-facing clinical work, most would prefer not to be routinely copied into results of tests they did not order unless a closed loop communication with the requester has been undertaken. To improve primary care as a viable profession and improve productivity, collaborative efforts between primary care and Health New Zealand – Te Whatu Ora will be required to address the current less-than-ideal method of transfer of care and to realise the principles of “Transfer of Care and Test Results Responsibility.”

Gender disparity and the impact of COVID-19 on surgical training in New Zealand ophthalmology

Hanna Katovich, Vidit Singh, Eugene Michael, James McKelvie

Our study examined how the COVID-19 pandemic affected surgical training for New Zealand's future eye surgeons (ophthalmology trainees), focusing on differences between genders and hospital locations (urban vs. provincial). We found that while trainees were present for a similar number of operations, the number of surgeries they actually performed dropped significantly during the pandemic. This negative impact was felt almost entirely by female trainees working in urban hospitals, whose hands-on surgical opportunities decreased substantially, while other groups were largely unaffected. Our findings suggest

that major healthcare disruptions can worsen inequalities in surgical training and highlight a need to ensure fair opportunities for all trainees, particularly women in urban-based programs.

New Zealand Heart Failure Workforce Survey 2023

Helen McGrinder, Jocelyne Benatar, Pamela Freeman, Sarah-Jane Brown, Shakiya Ershad, Andrew McLachlan, Deborah L Harris

This survey looked at the number and roles of nurses who care for people with heart failure (a condition where the heart doesn't pump blood as well as it should) across Aotearoa New Zealand. It found that while the number of heart failure nurses has increased, there are still not enough to meet the needs of patients, especially in rural or less populated areas. Nurse practitioners, who are highly trained nurses who can diagnose, prescribe medication and manage care independently, are underused. Many patients wait too long to be seen, start treatment or get important tests like heart scans. To improve care, the health system needs more heart failure nurses, better support for nurse practitioners and fair access to services across all regions.

Introducing the Hauora Māori Equity Toolkit for Specialist Healthcare Services (HMET-SHS)

Maira Patu, Melissa Kerdemelidis, Nadia Summers, Nathan J Monk, Amber Philpott, Angela Beard, Janet Geddes, Scott Babington, Stephen Mark, Suzanne Pitama

The Hauora Māori Equity Toolkit for Specialist Healthcare Services (HMET-SHS) is a service evaluation tool designed to address gaps in hospital-based health services to facilitate Māori health equity. The tool assigns equity-focused tasks to the service's workforce across all clinical and non-clinical domains. A baseline score is taken, then if any gaps are identified, there are examples and support materials available for making any desired changes. The intention is for hospital departments to make improvements when indicated and then re-score the HMET-SHS items down the track to see whether they are making progress in delivering equitable services for Māori. The items in the HMET-SHS are evidence-based and developed by experts especially for Aotearoa New Zealand hospital services.

Reappraisal of the hype and hope offered by psilocybin treatment of depression

Ben Beaglehole, Jenni Manuel

Considering recent announcements, we summarise the evidence for psilocybin treatment of depression to ensure expectations by the public and health professionals are appropriately set. We highlight issues with psilocybin studies that mean benefits are over-stated. We suggest that psilocybin treatment is likely to remain a niche treatment because it is resource intensive and costly.

Strengthening health leadership to tackle health system challenges: reflections from our experience

Ashley Bloomfield, Sisira Jayathissa, Stephen Dee, Criselda Sayoc

Hospitals and other healthcare organisations are complex and require many different groups to work well as a team. Good teamwork requires good leaders, but many people working in hospitals are not given leadership training. When we trained our leaders at Hutt Hospital this had a positive impact on staff wellbeing and the care of patients. We believe leadership training for people working in New Zealand's health system is essential for us to successfully address health system challenges as a country.

Spontaneous closure and later recurrence of a macular hole requiring vitrectomy

QuanLe Li, Francesc March de Ribot

This case report describes a male in his 70s who presented with a small macular hole (MH), a gap in the central part of the retina responsible for sharp vision, measuring 216µm at its narrowest point. The hole initially closed on its own, likely due to natural tissue bridges forming across it, but reopened 4 years and 6 months later as a much larger MH, measuring 410µm. Surgery was then required, involving removal of the eye's gel-like substance (vitreous), peeling a thin layer of the retina to relieve tension and inserting a gas bubble to help the hole close. After surgery, the patient's vision improved, and the patient returned to normal daily activities and remains healthy with regular eye examinations.

Definitive treatment of cholecystitis via cystic artery pseudoaneurysm embolisation

Li Ning Yong, Edmund Leung

This paper describes a rare complication of gallbladder inflammation (cholecystitis), where a blood vessel supplying the gallbladder (the cystic artery) developed a weak ballooned spot (a pseudoaneurysm). The risk of it bursting is dangerous and can cause life-threatening internal bleeding. A 52-year-old man was treated without open surgery using a minimally invasive technique called embolisation, where the weakened blood vessel was blocked from inside using medical glue. Remarkably, his gallbladder shrank away on its own afterwards, meaning no further surgery was needed. This is the first reported case where embolisation alone completely resolved both the complication and the gallbladder problem itself.

Unicuspid aortic valve with ascending aortic aneurysm: a rare cause of heart failure in a middle-aged male

Mona Alsomali

This paper describes the case of a 51-year-old man who developed severe heart failure because of a rare heart valve problem called a unicuspid aortic valve. Normally the aortic valve has three flaps (cusps), but in this condition there is only one, leading to narrowing (stenosis) and leakage (regurgitation). He also had a dangerous swelling of the main artery from the heart (ascending aortic aneurysm). After treatment to stabilise his heart, he successfully underwent surgery to replace both the faulty valve and the enlarged artery. This case highlights the importance of recognising rare valve problems early, as timely surgery can prevent serious, life-threatening complications.

The road ahead: transforming New Zealand ambulance (out-of-hospital) services

Dylan A Mordaunt

Ambulance services have moved far beyond patient transport to deliver advanced emergency, urgent and primary care. Paramedics now perform complex procedures, such as rapid sequence intubation, under robust clinical governance.¹ Yet, unlike the police and fire services, they have never been recognised in statute as an emergency service.² This omission contrasts with Australia, Canada and the United Kingdom, where ambulance services have clear legislative mandates.³ A new *Emergency Management Bill* aims to correct this disparity. At the same time, demand for ambulance care is rising because of an ageing population, growing chronic disease, inequities, pressure on hospitals and a mental health crisis.^{4,5} New Zealanders increasingly call 111 for frailty, minor illness and psychosocial distress, exposing structural weaknesses in out-of-hospital care. A desire to reverse this trend has policymakers placing further pressures on ambulance services rather than addressing the drivers of increased ambulance demand, such as primary care market failure.

Evolving paramedicine: regulation, workforce and scope

Until 2021 anyone could call themselves a paramedic. Registration under the *Health Practitioners Competence Assurance Act* established national standards and protected the title for practitioners with a Bachelor of Health Science (Paramedicine) and demonstrated competence.⁶ Teams comprise of volunteers, unregulated emergency medical technicians (EMTs) and degree-qualified paramedics. The Paramedic Council is developing specialist endorsements for critical, extended and intensive care paramedics.⁶ Volunteers and EMTs remain outside regulated scopes, leaving many rural stations reliant on responders who cannot offer comprehensive care. Expanded scopes enable “see and treat” care at home, prescribing under standing orders and telehealth-sup-

ported triage. Current practice has far outgrown the scope of existing legislation, which now needs to be updated to allow independent prescribing and diagnostics.⁷

Rising demand and changing demographics

Emergency call volumes have climbed steadily over the past decade.⁸ Ageing, multimorbidity and persistent inequities mean more patients have complex needs that must be managed in the community. Mental health demand is a significant driver: a recent police review found that 11 % of calls to the Emergency Communications Centre were for mental health crises, equating to one call every 7 minutes.⁹ As the police adopt higher thresholds for attendance and set shorter emergency department handover times, paramedics are increasingly the sole responders, despite a lack of legislation enabling safe and appropriate responses.^{10,11} A qualitative study of New Zealand paramedics attending suicide callouts reported nightmares, flashbacks and post-traumatic stress, with participants feeling they were filling gaps left by under-resourced mental health services.¹² Limited access to primary and urgent care clinics amplifies demand; many people call 111 for non-acute conditions, and call takers who answer these calls follow scripted algorithmic responses rather than providing a clinical lens, potentially perpetuating inequities.¹³ Rural response times are longer and rely heavily on first responders. Stark post-code lotteries exist—for instance, south of Peka Peka on the Kāpiti Coast may have a dual paramedic crew response, in contrast to north of Peka Peka where this may be a single EMT response.

Funding, workforce and system pressures

Unlike police and fire services, ambulance

organisations lack guaranteed funding. Hato Hone St John receives about 83% of its budget from the government and must raise the remainder through donations and co-payments; Wellington Free Ambulance also relies heavily on fundraising.⁸ Capital costs for stations, vehicles and equipment are largely unfunded and dependent on donations. Fragmented commissioning for road, air and non-emergency transport creates inefficiencies, and fragmented delivery contributes to preventable serious adverse events. Salaries lag behind those of nurses and other allied professionals and have been eroded by wage freezes, prompting industrial action.⁸ Understaffed shifts, rural recruitment challenges, reliance on volunteers and rising burnout underscore the need for workforce investment. Prolonged “ramping” at overcrowded emergency departments reduces ambulance availability and is linked to poor mental health among paramedics.^{9,14} Funding reforms must also honour Te Tiriti o Waitangi by embedding Māori governance and cultural safety.¹³

Innovation, technology and future opportunities

Electronic health records, real-time data sharing and predictive analytics could improve triage and resource deployment;⁹ however, long-term underfunding has resulted in creaking and vulnerable digital emergency management systems. Community responder apps mobilise trained volunteers (e.g., GoodSAM) but remain entirely privately funded. Telemedicine and tele-EMS programmes demonstrate the potential of remote consultation, yet policy-maker responses appear to lag.^{15,16} Horizon scans suggest artificial intelligence could automate dispatch and triage, though evidence is limited.¹⁷ Updated legislation will be required to support paramedic prescribing, portable diagnostics and other innovations.

The road ahead: recommendations

The forthcoming *Emergency Management Bill*'s recognition of ambulance services as an emergency service² provides an opportunity to strengthen the sector. However, legislative recognition must be matched with policy action:

1. *Secure and equitable funding:* Fully integrate ambulance services into the publicly funded health system, with baseline operational and capital funding that reflects demand and inflation. Ambulances are the key movement strategy of any public health system yet in New Zealand frequently remain absent from strategic discussions. Co-payments for emergency transport and reliance on charitable donations challenge equity. Policymakers and New Zealanders must consider whether they can continue to be comfortable with the free system present in the capital and surrounding regions while leaving people in other regions to cover co-payments. The joint commissioning of road, air and non-emergency ambulance services should be streamlined to support integrated planning and accountability, alongside a cohesive strategy for the medical/trauma retrieval system.
2. *Pay parity and workforce investment:* Align paramedic salaries with comparable health professions to attract and retain staff. Expand recruitment and bonded-scholarship schemes for rural and remote practice. Fund capacity building through dedicated schemes, rather than relying on private service providers to determine this. Fund continuing professional development and mental health support for staff, including debriefing and counselling services.
3. *Strengthen rural and remote services:* Develop incentives and flexible rostering to recruit registered paramedics to rural stations. Invest in telehealth and virtual supervision. Support volunteer first responders with training and equipment. Ensure equitable access to advanced paramedic practice.¹⁸
4. *Integrate mental health response:* Scale up co-response teams pairing paramedics with mental health professionals and invest in crisis respite facilities. Provide paramedics with specialised training in de-escalation and culturally safe care. Establish clear protocols for when police should assist, ensuring that patient and staff safety are maintained. Recognise that paramedics experience significant psychological trauma when attending suicide callouts¹² and ensure access to support services.
5. *Improve integration and flow:* Ensure robust integration of ambulance clinical governance within the national clinical governance system, rather than under a contracted provider mechanism—similar to

every Australian jurisdiction, including the privately funded Western Australia service. Address ramping by investing in hospital (ward) capacity, community care and rehabilitation services. Implement real-time data sharing between ambulance services and emergency departments to coordinate arrivals and reduce waiting times. Adopt systemwide policies to minimise negative ramping experiences, which are linked to poor mental health among paramedics.¹⁴

6. *Foster innovation:* Support research on and evaluation of new technologies, including artificial intelligence–assisted triage, digital health platforms and mass-casualty response systems. Provide regulatory frameworks for paramedic prescribing and independent decision making consistent

with international best practice.

Conclusion

New Zealand's out-of-hospital care system stands at a crossroads. Recognising ambulance services as an emergency service is essential, but must be accompanied by secure funding, workforce investment, improved rural services, integrated mental health care, system-wide flow improvements and innovation. By supporting paramedics with appropriate training, remuneration and resources, and by harnessing technology and Te Tiriti principles, New Zealand can build a resilient, equitable ambulance service capable of meeting the diverse needs of its communities in the decades ahead.

COMPETING INTERESTS

The author is employed by Wellington Free Ambulance and is involved in paramedic education and service delivery. He also holds an adjunct academic appointment at the Faculty of Health, Te Herenga Waka—Victoria University of Wellington.

The author is an RACMA board member and an RACP board subcommittee member.

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Drug harm prevention needs among adolescents in Aotearoa New Zealand: findings from the Youth19 Survey

Grace Sullivan, Jane Zhang, Luisa Silailai, Karen Wright, Emily Cooney, Michaela Pettie, Jude Ball

ABSTRACT

BACKGROUND: Drug use (including tobacco, alcohol and illicit drugs) is a leading cause of premature death, health loss and health inequities in Aotearoa New Zealand. Effective prevention and early intervention have potential to reduce drug-related human suffering across the lifecourse, thus decreasing pressure on health and social services.

METHODS: To inform policy and practice, we investigated drug harm indicators among secondary students in Aotearoa and identified sub-populations at greatest need. We used Youth19 survey data (N=7,721) to investigate five indicators related to e-cigarette, tobacco, alcohol or cannabis use: prevalence of 1) past month use, 2) heavy use, 3) worry about use, 4) desire to cut down or stop, and 5) reported difficulty accessing cessation help.

RESULTS: We found many adolescents, particularly those who used tobacco, were worried about their own drug use and wanted to cut down, yet getting appropriate help was not always easy. Need was not evenly spread; Māori, Pacific and LGBTQ+ youth, those aged under 16 years and those living in small towns, rural areas and the most socio-economically deprived communities had higher needs on many indicators.

CONCLUSION: Greater investment in drug harm prevention and early intervention may be warranted, with a focus on under-served populations.

Drug use (including tobacco, alcohol and illicit drugs) is a leading cause of premature death, health loss and health inequities globally.^{1,2} In Aotearoa New Zealand (hereafter Aotearoa), tobacco, alcohol and illegal drug use accounts for nearly 9%, about 4% and just over 2% of total health loss respectively.² Drug use generally begins during adolescence¹ and early uptake is a predictor of long-term health and social problems, including substance use disorders in adulthood.³ The social and economic costs of drug harm to people, their families and communities are profound, hence drug harm prevention is an important population health issue in Aotearoa.

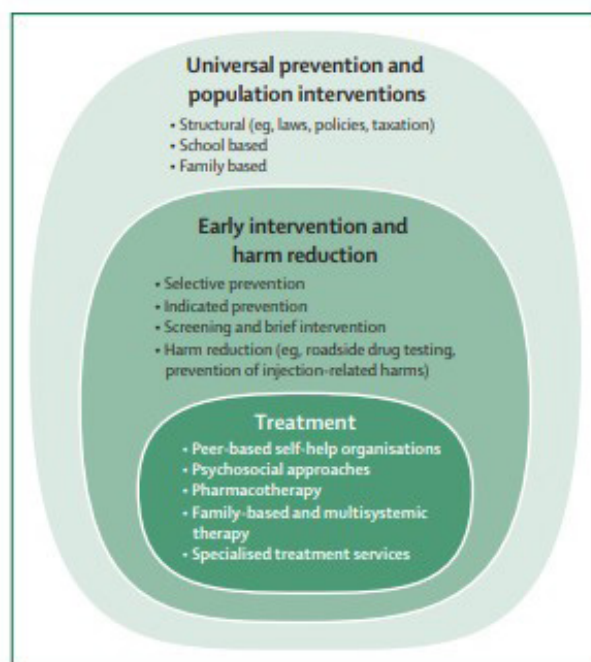
Effective prevention and early intervention have the potential to reduce drug-related suffering across the lifecourse and reduce pressure on health and social services.^{3,4} This study explores drug harm prevention needs among adolescents in Aotearoa. We define “drug harm prevention” as organised efforts using the full spectrum of interventions at multiple levels (Figure 1) to a) reduce or delay drug use, b) mitigate the negative impacts of drug use, and c) support young people to cut

down or stop drug use.

Our conceptualisation of drug harm prevention acknowledges that the environments in which young people live, learn and play influence their drug use. For example, widespread availability and marketing of e-cigarettes, tobacco and alcohol are associated with increased use by adolescents.⁵ At the individual level, adolescents engage with drug use for many reasons including curiosity, pleasure and as a coping mechanism.⁶ Reasons for use can affect when and how drugs are used, and the risk of harm. For example, drug use at a young age is often associated with trauma or psychosocial difficulties and used as a coping mechanism;⁷ harm tends to be greater when drugs are used as a coping mechanism because the dosage and frequency of use tend to be higher.^{8,9}

In Aotearoa, the collective trauma of colonisation and its intergenerational effects are important contextual factors that contribute to higher risk of drug harm among Māori and Pacific adolescents.^{10,11} Structurally privileged groups, including Pākehā (New Zealanders of European descent), have lower exposure to proximal risk factors for adolescent drug use

Figure 1: Spectrum of interventions used to prevent drug harm in young people. (Reproduced with permission from: Stockings et al. Prevention, early intervention, harm reduction, and treatment of substance use in young people. *Lancet Psychiatry*. 2016;3(3):280-296.)



(e.g., experiences of interpersonal racism, social exclusion, exposure to alcohol marketing, sexual abuse, family violence, parental drug use) compared to Indigenous peoples, migrants, low-income communities and those who identify as lesbian, gay, bisexual, transgender, queer, intersex and asexual (LGBTQ+).¹²⁻¹⁴

Although adolescent drug use in Aotearoa has generally declined over the past two decades, significant concerns remain. Prevalence of tobacco and alcohol use among secondary students is now lower than in the early 2000s, but inequities remain entrenched, reflecting the ongoing impacts of colonisation and broader structural and commercial determinants of health.^{10,15} The rapid uptake of nicotine-containing e-cigarettes since 2018 exemplifies the challenge that new and emerging substances pose, with daily use reported by 10% of Year 10 students in 2022, and particularly high rates among Māori youth (22%) compared with Pacific (14%) and Pākehā (8%).¹⁶ Despite declines, alcohol and cannabis use remain prevalent by international standards; in 2019, 44% of Year 13 students reported recent binge-drinking, and nearly a quarter of high school students had tried cannabis—both substances linked to adverse mental health and educational outcomes.¹⁷

Evidence suggests a substantial health burden from illegal drug use among young people, with risks heightened by early initiation and poly-substance use.^{18,19} These patterns underscore the urgent need for youth-specific drug harm reduction strategies, particularly those addressing systemic inequities.

The aim of this study is to inform policy and practice by investigating drug harm prevention needs among secondary students in Aotearoa, and updating and extending previous Aotearoa research. Previous studies have established high, inequitable and growing levels of foregone healthcare among adolescents in Aotearoa,^{20,21} yet recent investigation of unmet need for tobacco, alcohol and other drug services, by demographic sub-group, is a gap. Further, young people's own concerns about their drug use have not been explored, except for alcohol use,²² and exploration of patterning of drug use by demographic factors has also been limited to date.

Our study focusses on four drugs—e-cigarettes, tobacco, alcohol and cannabis—and investigates five indicators: prevalence of 1) past month use; 2) heavy use; 3) worry about use, 4) desire to cut down or quit, and 5) reported difficulty getting help to stop tobacco, alcohol or other drug

use. Our investigation stratifies these indicators by socio-demographic variables to identify priority sub-groups, where need may be greater, and to better understand this issue for rangatahi Māori (Māori youth), as tangata whenua (Indigenous people of Aotearoa).

Methods

This study is a secondary analysis of data from Youth19, the latest Youth2000 survey on the health and wellbeing of secondary school students aged 13–18. Detailed methods, participant characteristics and ethical approval details are reported elsewhere.²³

We focussed on the drugs most commonly used by adolescents and for which data were readily available: e-cigarettes, tobacco, alcohol and cannabis.

Survey design

Youth19 used a two-stage clustered sampling design with randomly selected schools and, within these, randomly selected students in three regions: Te Tai Tokerau (Northland), Tāmaki Makaurau (Auckland) and Waikato, an area that includes 47% of the secondary school population of Aotearoa. Data were collected in 2019, and the total number of respondents was 7,721. The survey included questions about home, school and community life, health behaviour, health status and access to healthcare services.

Measures

“Past month use” of e-cigarettes, tobacco, alcohol and cannabis, was based on self-reported use in the past 4 weeks.

“Heavy use” was defined with the understanding that any drug use can harm adolescents, and heavier use increases this risk. For alcohol, “usually consuming five or more drinks per occasion” was the indicator used, based on evidence that binge drinking is associated with elevated risk of acute alcohol harm.^{13,24} The data available did not allow us to use other established measures of hazardous drinking (e.g., AUDIT [Alcohol Use Disorder Identification Test] score ≥ 8 , or drinking over Ministry of Health guidelines). For e-cigarettes and tobacco, heavy use was defined as using weekly or more often, given this level of use puts people at high risk of nicotine addiction²⁵ and greatly increases the risk of health, social and financial harm over the lifecourse.²⁶ For cannabis, heavy use was defined as using weekly or more often, as

frequent use in this age group is associated with immediate and long-term negative impacts.^{27,28}

“Worried about use” was based on the question “Do you worry about doing any of these things: a) cigarettes, b) vaping, c) alcohol, d) marijuana”, with responses of “a lot”, “some” and “a little” grouped as an affirmative response.

“Desire to cut down” was based on responses to survey questions “Would you like to cut down or give up on any of these things?” and “Have you ever tried to cut down or give up any of these things?” In preliminary analysis, we found that responses were highly correlated, suggesting these two questions are measuring the same underlying construct (i.e., desire to cut down). Therefore, we combined these variables (using “or”) to simplify reporting.

“Difficulty getting help” was based on responses to the survey question “In the last 12 months, have you had any difficulty getting help for any of the following” and the specific sub-questions “Help with stopping smoking” and “Help with stopping drug or alcohol use”. Response options were “yes” or “no” for each.

Demographic variables were: sex (male, female), age (<16, 16+), ethnic group (Māori, Pacific, non-Māori/non-Pacific), LGBTQ+ status (yes, no), locale (major urban, small town, rural), region (Te Tai Tokerau, Tāmaki Makaurau, Waikato) and neighbourhood socio-economic deprivation (least, medium, most) based on the New Zealand Index of Deprivation 2018.

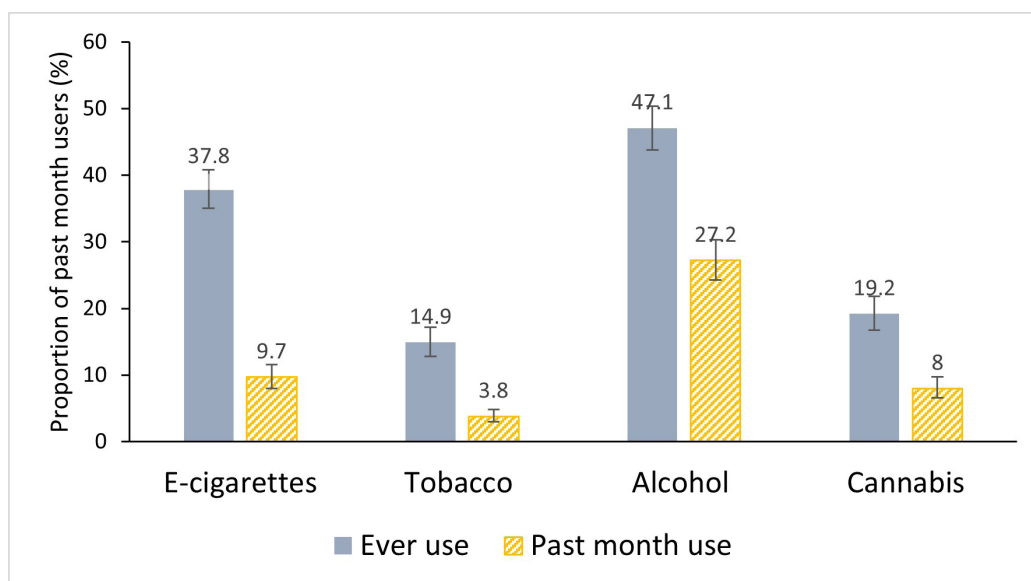
Analysis

Analysis was conducted using R (The R Foundation for Statistical Computing version 4.1.3). Data were initially weighted using inverse probability of selection weights. Then, for prevalence estimates to better represent the population from which the sample was drawn, generalised raking²⁹ was used to correct for non-response and to calibrate the results to the regional secondary school population.³⁰

We used descriptive statistics to calculate lifetime and past month prevalence for each drug. Among past month users, we estimated the prevalence of 1) heavy use, 2) concern about use, and 3) desire to cut down, overall and by demographic group, using weighted proportions.

To quantify difficulty in getting help, we calculated 1) the proportion of past month tobacco users and secondary students overall who reported difficulty getting help to stop smoking, and 2) the proportion of past month alcohol or cannabis users, and sec-

Figure 2: Prevalence of e-cigarette, tobacco, alcohol and cannabis use in secondary school students for the Te Tai Tokerau, Tāmaki Makaurau and Waikato Regions, 2019.



secondary students overall, who reported difficulty getting help to stop alcohol or other drug use. We used logistic regression to examine differences in reported difficulty across demographic groups, presenting results as odds ratios and p-values.

Results

Lifetime and past month drug use

Ever use of e-cigarettes (38%) and alcohol (47%) was relatively common, whereas ever use of tobacco (15%) and cannabis (19%) was less prevalent (Figure 2). Past month use was much less prevalent than ever use for each drug.

The remaining results focus on secondary school students who used e-cigarettes, tobacco, alcohol or cannabis in the past month.

E-cigarettes

Among those who had used e-cigarettes in the past month, 59% reported vaping weekly or more often, half (50%) reported concern about their e-cigarette use and about a third (34%) wanted to cut down or stop (Table 1). Findings for demographic sub-groups are provided in Table 1. Desire to cut down or stop was highest among those living in areas with the least socio-economic deprivation (40%).

Tobacco

Among those who had used tobacco in the past month, 63% reported smoking weekly or more

often, 63% reported concern about their tobacco use and two out of three (66%) wanted to cut down or stop (Table 2). Findings for demographic sub-groups are provided in Table 2. Heavy use differed significantly by ethnic group.

Alcohol

Among those who had used alcohol in the past month, almost half (46%) reported they usually drank five or more alcoholic drinks per drinking occasion, 45% were worried about their alcohol use and 18% wanted to cut down or stop. Findings for demographic sub-groups are provided in Table 3. Pacific students were least likely to have used alcohol in the past month (19%), but among past month users were most likely to drink heavily (65%). Prevalence of heavy use differed by age and sex as well as ethnicity. Those living in areas of high socio-economic deprivation were more likely to report wanting to cut down or stop (26%) compared with those in the least deprived areas (15%).

Cannabis

Among those who had used cannabis in the past month, 44% reported using weekly or more often, about half (51%) worried about their cannabis use and 31% wanted to cut down or stop. Findings for demographic sub-groups are provided in Table 4. Heavy use was higher in neighbourhoods with high socio-economic deprivation (57%) than in the least deprived areas (35%).

Table 1: Indicators of need among secondary school students who use e-cigarettes, by demographic variables, 2019.

	Past month e-cigarette use		E-cigarette use weekly or more often among past month users (N=732)	Worried about e-cigarette use among past month users (N=732)	Desire to cut down or stop among past month users (N=732)
	n[N]	% [95% CI]	% [95% CI]	% [95% CI]	% [95% CI]
Total	732 [7,161]	9.7 [8.0–11.6]	58.9 [53.1–64.4]	50.1 [44.8–55.5]	33.9 [28.5–39.7]
Age					
<16	357 [4,446]	7.6 [6.0–9.5]	53.0 [46.1–59.8]	50.9 [43.8–58.0]	31.4 [26.1–37.1]
16+	375 [2,715]	13.1 [10.5–16.3]	64.4 [58.2–70.1]	49.5 [42.0–57.0]	36.1 [29.3–43.6]
Sex					
Female	353 [3,953]	8.4 [6.6–10.7]	54.9 [47.9–61.8]	54.9 [48.0–61.5]	30.6 [23.3–39.1]
Male	370 [3,193]	11.2 [9.6–13.0]	62.4 [55.5–68.8]	44.9 [38.2–51.7]	36.5 [30.1–43.5]
Ethnic group					
Non-Māori/non-Pacific	488 [5,000]	9.3 [7.6–11.4]	59.3 [51.5–66.7]	50.1 [44.3–55.9]	34.3 [29.5–39.4]
Māori	176 [1,331]	13.0 [10.5–16.1]	44.5 [35.5–53.9]	51.2 [39.7–62.6]	31.2 [20.4–44.5]
Pacific	103 [1,042]	9.5 [7.0–12.6]	62 [55.7–68.0]	49.1 [32.4–65.9]	32.4 [17.2–52.6]
LGBTQ+					
No	638 [6,347]	9.5 [7.8–11.4]	57.3 [51.1–63.3]	50.0 [44.8–55.3]	33.8 [28.0–40.2]
Yes	94 [814]	11.5 [8.0–16.3]	68.8 [54.6–80.2]	50.9 [40.3–61.3]	34 [22.3–48.1]
Locale					
Major urban	431 [4,886]	8.3 [6.6–10.4]	58.7 [50.1–66.8]	49.9 [43.2–56.6]	34.9 [29.7–40.6]
Small town	77 [510]	14.6 [11.9–17.8]	62.2 [49.2–73.6]	48.6 [35.0–62.4]	21.9 [14.4–31.9]
Rural	118 [1,051]	11.3 [8.4–14.9]	55.4 [44.8–65.6]	44.4 [35.7–53.4]	29.8 [21.3–39.8]
Region					
Te Tai Tokerau	88 [854]	10.4 [7.8–13.9]	58.6 [38.2–76.4]	47.2 [29.9–65.2]	31.1 [21.7–42.4]
Tāmaki Makaurau	552 [5,178]	10.2 [8.1–12.7]	58.6 [51.5–65.3]	51.7 [45.6–57.8]	35.5 [29.3–42.3]
Waikato	92 [1,129]	6.9 [4.7–10.2]	61.3 [54.0–68.1]	40.6 [33.4–48.2]	23.9 [15.6–34.7]

Table 1 (continued): Indicators of need among secondary school students who use e-cigarettes, by demographic variables, 2019.

Neighbourhood socio-economic deprivation					
Least socio-economic deprivation	247 [2,029]	11.8 [9.6–14.4]	61.3 [51.3–70.4]	53.2 [44.9–61.4]	39.5 [33.8–45.5]
Medium socio-economic deprivation	232 [2,666]	8.1 [6.3–10.4]	61 [53.0–68.4]	45.8 [38.9–52.8]	30.5 [22.5–39.9]
Most socio-economic deprivation	147 [1,749]	7.8 [6.2–9.9]	50.2 [41.7–58.6]	45.1 [35.4–55.2]	22.4 [15.2–31.8]

95% CI = 95% confidence interval; LGBTQ+ = lesbian, gay, bisexual, transgender, queer.

Table 2: Indicators of need among secondary school students who smoke tobacco, by demographic variables, 2019.

	Past month tobacco use		Smokes tobacco weekly or more often, among past month users N=297	Worried about smoking tobacco, among past month users N=297	Desire to cut down, among past month users N=297
	n[N]	% [95% CI]	% [95% CI]	% [95% CI]	% [95% CI]
Total	297 [7,169]	3.8 [3.0–4.8]	63.2 [55.4–70.4]	62.9 [55.5–69.7]	65.7 [55.9–74.4]
Age					
<16	137 [4,442]	2.8 [2.0–3.8]	61.5 [50.8–71.1]	61.6 [52.4–70.1]	60.0 [49.6–69.6]
16+	160 [2,727]	5.5 [4.3–7.0]	64.6 [52.0–75.4]	63.8 [54.2–72.4]	70.1 [59.4–79.0]
Sex					
Female	173 [3,960]	3.9 [2.8–5.3]	60.2 [48.3–71.0]	68.4 [59.9–75.8]	70.5 [60.1–79.2]
Male	119 [3,194]	3.6 [2.6–4.9]	66.9 [55.8–76.5]	55.4 [45.3–65.1]	58.3 [46.5–69.2]
Ethnic group					
Non-Māori/non-Pacific	134 [5,001]	2.6 [2.0–3.3]	54.7 [43.4–65.5]	68.9 [61.0–75.8]	63.8 [52.7–73.5]
Māori	108 [1,346]	7.4 [5.8–9.4]	67.8 [52.1–80.3]	50.3 [37.1–63.6]	64.8 [49.2–77.8]
Pacific	75 [1,035]	6.6 [5.0–8.7]	77.3 [65.1–86.1]	63.9 [45.4–79.1]	72.6 [51.8–86.7]
LGBTQ+					
No	239 [6,358]	3.5 [2.7–4.4]	63.8 [55.2–71.5]	62.3 [54.1–69.8]	63.7 [52.4–73.7]
Yes	58 [811]	6.5 [4.4–9.5]	60.9 [45.4–74.4]	65.8 [52.6–76.9]	74.2 [57.9–85.8]

Table 2 (continued): Indicators of need among secondary school students who smoke tobacco, by demographic variables, 2019.

Locale					
Major urban	168 [4,884]	3.3 [2.4–4.4]	65.9 [55.1–75.3]	65.3 [55.8–73.8]	64.2 [49.8–76.5]
Small town	43 [517]	7.4 [5.8–9.5]	59.8 [42.3–75.2]	56.3 [35.8–74.8]	72.8 [54.5–85.7]
Rural	48 [1,050]	4.3 [2.8–6.3]	60.8 [43.4–75.9]	49.2 [38.2–60.3]	47.3 [31.5–63.7]
Region					
Te Tai Tokerau	49 [855]	4.8 [2.7–8.6]	80.7 [60.9–91.8]	52.1 [32.2–71.3]	58.4 [40.9–73.9]
Tāmaki Makaurau	191 [5,175]	3.5 [2.6–4.8]	63 [53.2–71.8]	66.6 [57.7–74.5]	66.7 [53.3–77.9]
Waikato	57 [1,137]	4.6 [3.6–6.0]	55.3 [36.6–72.5]	53.2 [36.8–68.8]	66.1 [51.4–78.1]
Neighbourhood socio-economic deprivation					
Least socio-economic deprivation	49 [2,030]	2.5 [1.8–3.4]	46.9 [27.2–67.6]	57.0 [40.5–72.0]	52.2 [33.2–70.5]
Medium socio-economic deprivation	93 [2,662]	3.3 [2.4–4.5]	60.4 [49.7–70.2]	62.8 [52.0–72.5]	60.6 [48.4–71.6]
Most socio-economic deprivation	117 [1,758]	5.7 [4.2–7.5]	76.0 [65.4–84.2]	62.3 [48.1–74.6]	70.8 [54.4–83.1]

95% CI = 95% confidence interval; LGBTQ+ = lesbian, gay, bisexual, transgender, queer.

Socio-demographic patterning

Prevalence of past month use was markedly lower among younger students (under 16 years) for all drugs. Yet younger students who used tobacco or cannabis in the past month were as, or more, likely than older students to use those drugs heavily. Sex differences in prevalence of past month use were generally small, but prevalence of heavy use was often higher for males than females. Differences by ethnic group were marked, whereas differences between LGBTQ+ and non-LGBTQ+ were generally small, except past month tobacco use.

For most drugs, prevalence of past month use was lower in urban areas than in small towns or rural areas, though differences did not always reach statistical significance.

Among past month users, heavy use was generally more prevalent among students in the

most socio-economically deprived areas (i.e., less affluent) compared with the least socio-economically deprived (i.e., more affluent). E-cigarette use was the exception; differences did not reach statistical significance, but there was a trend towards higher prevalence of use and heavy use in neighbourhoods with the least socio-economic deprivation.

Worry about use

Those who used tobacco in the past month were most likely to be worried about their use (63%), followed by cannabis (51%), e-cigarettes (50%) and alcohol (45%) (Figure 3). Prevalence of worry did not necessarily correspond with prevalence of heavy use or desire to cut down.

Desire to cut down or stop

Desire to cut down or stop was highest for tobacco (66%) and markedly lower for e-cigarettes

Table 3: Indicators of need among secondary school students who use alcohol, by demographic variables, 2019.

	Past month alcohol use		Usually drinks 5+ drinks/occasion, among past month users N=2,050	Worried about alcohol use, among past month users N=2,050	Want to/tried to cut down, among past month users N=2,050
	n[N]	% [95% CI]	% [95% CI]	% [95% CI]	% [95% CI]
Total	2,050 [7,127]	27.2 [24.3–30.3]	45.5 [41.3–49.7]	44.7 [41.9–47.6]	17.6 [15.4–20.1]
Age					
<16	824 [4,419]	17.2 [14.9–19.7]	37.5 [32.9–42.3]	49.3 [44.7–53.8]	21.9 [19.0–25.0]
16+	1,226 [2,708]	43.3 [38.8–48.0]	50.5 [45.4–55.6]	41.9 [38.1–45.8]	15.0 [12.2–18.4]
Sex					
Female	1,104 [3,948]	26.8 [23.9–29.9]	40.1 [35.4–45.1]	46.3 [43.1–49.4]	18.1 [15.1–21.5]
Male	940 [3,166]	27.7 [24.0–31.8]	52.0 [48.2–55.8]	42.7 [37.8–47.6]	17.0 [13.7–20.9]
Ethnic group					
Non-Māori/non-Pacific	1,412 [4,987]	27.4 [24.5–30.6]	39.2 [35.2–43.3]	44.3 [41.0–47.5]	15.0 [12.8–17.4]
Māori	489 [1,329]	34.8 [31.4–38.4]	61.1 [55.0–66.8]	43.1 [37.3–48.9]	23.1 [18.5–28.5]
Pacific	224 [1,034]	18.9 [15.0–23.4]	64.8 [57.1–71.7]	53.0 [45.0–61.0]	29.9 [23.2–37.7]
LGBTQ+					
No	1,798 [6,318]	26.6 [23.6–29.8]	45.7 [41.4–50.1]	44.8 [42.0–47.5]	17.3 [15.0–19.9]
Yes	252 [809]	31.9 [26.6–37.8]	44.0 [38.4–49.6]	44.7 [39.3–50.1]	19.6 [14.5–25.8]
Locale					
Major urban	1,160 [4,868]	23.0 [19.8–26.6]	43.5 [38.4–48.7]	46.7 [44.2–49.1]	18.7 [15.2–22.8]
Small town	220 [509]	41.1 [37.3–45.1]	53.1 [47.6–58.6]	46.9 [37.5–56.2]	29.9 [15.6–27.5]
Rural	405 [1,048]	36.8 [33.2–40.5]	44.3 [39.3–49.4]	33.4 [27.4–39.5]	12.7 [9.8–16.1]

Table 3 (continued): Indicators of need among secondary school students who use alcohol, by demographic variables, 2019.

Region					
Te Tai Tokerau	325 [848]	37.7 [33.0–42.6]	52.3 [46.5–58.1]	41.5 [33.7–49.2]	15.5 [12.8–18.6]
Tāmaki Makaurau	1,336 [5,159]	25.0 [21.3–29.1]	44.0 [38.7–49.5]	46.7 [43.7–49.6]	17.1 [14.2–20.4]
Waikato	389 [1,120]	33.1 [30.1–36.3]	47.1 [36.5–57.9]	39.1 [32.6–45.5]	20.8 [17.1–25.1]
Neighbourhood socio-economic deprivation					
Least socio-economic deprivation	649 [2,025]	31.8 [28.7–35.1]	42.9 [36.5–49.6]	43.1 [38.3–47.9]	14.8 [11.9–18.2]
Medium socio-economic deprivation	708 [2,657]	25.4 [22.0–29.1]	41.0 [36.5–45.7]	43.4 [38.6–48.3]	16.4 [13.6–19.6]
Most socio-economic deprivation	428 [1,742]	21.4 [17.9–25.4]	54.8 [49.0–60.4]	47.4 [42.3–52.5]	26.1 [21.0–31.8]

95% CI = 95% confidence interval; LGBTQ+ = lesbian, gay, bisexual, transgender, queer.

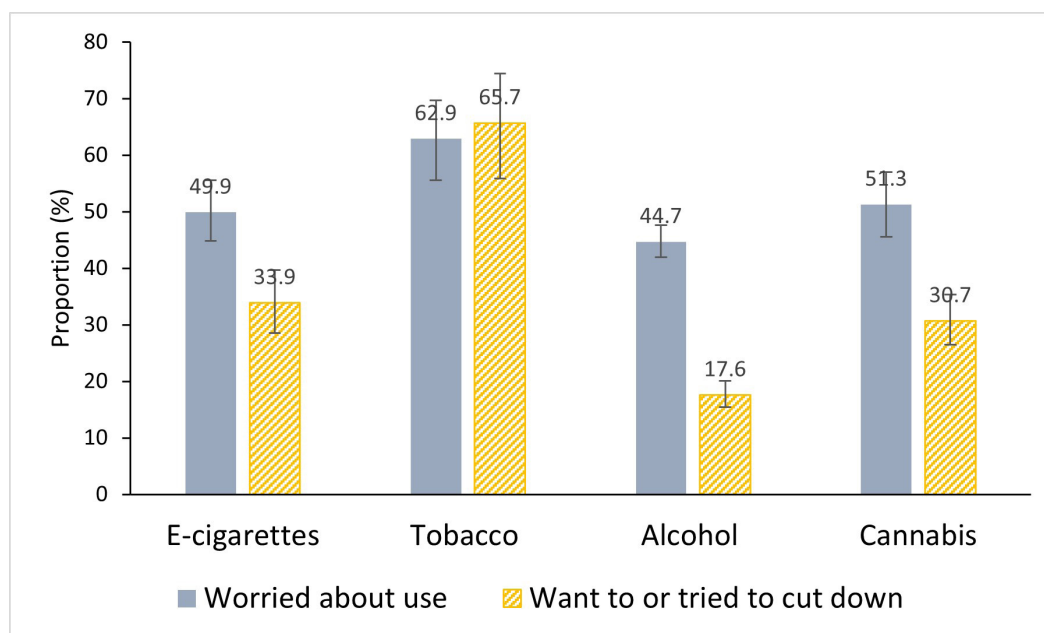
Table 4: Indicators of need among secondary school students who use cannabis, by demographic variables, 2019.

	Past month cannabis use		Weekly or more often, among past month users N=643	Worried about cannabis use, among past month users N=643	Desire to cut down, among past month users N=643
	n[N]	% [95% CI]	% [95% CI]	% [95% CI]	% [95% CI]
Total	643 [7,004]	8.0 [6.6–9.7]	44.2 [38.7–49.9]	51.3 [45.5–57.0]	30.7 [26.5–35.3]
Age					
<16	281 [4,339]	5.6 [4.4–7.0]	50.7 [44.3–57.1]	51.9 [44.2–59.6]	34.8 [27.9–42.5]
16+	353 [2,656]	12.0 [9.6–14.9]	39.4 [32.1–47.1]	50.9 [43.1–58.6]	27.8 [23.1–33.2]
Sex					
Female	315 [3,882]	7.3 [5.7–9.3]	38.4 [30.9–46.5]	49.6 [43.4–55.7]	27.4 [22.1–33.4]
Male	312 [3,099]	8.8 [7.3–10.6]	50.6 [43.4–57.8]	53.1 [44.5–61.6]	33.8 [28.8–39.3]
Ethnic group					
Non-Māori/ non-Pacific	345 [4,932]	6.5 [5.3–8.0]	38.0 [32.0–44.5]	49.9 [42.4–57.3]	29.7 [24.2–36.0]

Table 4 (continued): Indicators of need among secondary school students who use cannabis, by demographic variables, 2019.

Māori	236 [1,270]	16.3 [13.8–19.2]	51.7 [44.2–59.1]	51.3 [41.8–60.7]	30.3 [23.5–38.1]
Pacific	96 [995]	8.4 [6.1–11.5]	51.1 [39.2–62.8]	59.3 [48.0–69.7]	41.3 [28.4–55.4]
LGBTQ+					
No	539 [6,199]	7.7 [6.3–9.3]	44.1 [38.1–50.2]	51.0 [44.9–57.0]	30.3 [25.9–35.1]
Yes	95 [796]	10.9 [8.3–14.1]	45 [32.4–58.3]	53.0 [40.7–65.0]	32.6 [23.0–43.9]
Locale					
Major urban	310 [4,778]	6.1 [4.7–7.9]	45.4 [37.2–53.8]	48.7 [40.3–57.2]	32.3 [26.5–38.8]
Small town	66 [494]	12.2 [8.5–17.2]	49 [36.1–62.1]	53.6 [40.1–66.6]	26.6 [14.0–44.5]
Rural	135 [1,034]	11.7 [9.4–14.5]	43.5 [33.3–54.2]	44.6 [33.8–56.0]	26.3 [18.0–36.8]
Region					
Te Tai Tokerau	127 [836]	14.1 [9.7–20.1]	38.7 [32.4–45.3]	54.3 [46.5–61.9]	32.3 [21.4–45.4]
Tāmaki Makaurau	376 [5,070]	7.0 [5.4–9.0]	44.4 [36.5–52.6]	48.2 [36.5–60.0]	32.9 [27.6–38.6]
Waikato	131 [1,089]	10.4 [7.1–15.0]	47.3 [38.2–56.7]	43.0 [35.1–51.3]	22.9 [13.8–35.6]
Neighbourhood socio-economic deprivation					
Least socio-economic deprivation	157 [2,005]	7.4 [5.9–9.2]	34.8 [27.6–42.7]	55.6 [46.4–64.4]	25.4 [18.9–33.2]
Medium socio-economic deprivation	188 [2,612]	6.6 [5.2–8.4]	44.9 [36.2–54.0]	44.2 [32.9–56.1]	31.8 [25.7–38.5]
Most socio-economic deprivation	166 [1,688]	8.4 [6.3–11.2]	56.6 [48.2–64.6]	46.3 [36.7–56.1]	33.6 [23.4–45.6]

95% CI = 95% confidence interval; LGBTQ+ = lesbian, gay, bisexual, transgender, queer.

Figure 3: Proportion of past month users who were worried about their use or reported desire to cut down, 2019.

(34%) and cannabis (31%). Participants who used alcohol (18%) were the least likely to report desire to cut down (Figure 3). There was a trend towards higher prevalence of desire to cut down among Pacific students and those living in areas of high socio-economic deprivation for most drugs, though differences did not reach statistical significance.

Difficulty getting help

The proportion who reported difficulty getting help to stop smoking in the previous 12 months was 19% among those who smoked tobacco in the past month (Table 5), and 1.7% (95% confidence interval [CI] 1.2–2.4) among secondary school students overall (data not shown). Differences between socio-demographic groups did not reach statistical significance, but the results suggest that younger, LGBTQ+, Māori and Pacific students may be more likely to have difficulty accessing help to stop smoking.

The proportion who reported difficulty getting help to stop alcohol or other drug use was 5% of those who reported past month alcohol and/or cannabis use (Table 5) and 2% (95% CI 1.6–2.5) of secondary students overall (data not shown). Age and ethnic group were significantly associated with difficulty in accessing help, with younger, Māori and Pacific students more likely to report

difficulty accessing help to stop alcohol or other drug use. Other differences did not reach statistical significance, but the findings suggest LGBTQ+ students and those living in rural areas may also be more likely to have difficulty accessing help to stop alcohol and other drug use.

Discussion

Our investigation highlights drug harm prevention needs among adolescents in Aotearoa. Although most secondary students reported they did not use e-cigarettes, tobacco, alcohol or cannabis, the prevalence of past month use (10%, 4%, 27% and 8% respectively) is concerning, especially given many reported heavy use. Many past month users reported concern about their own use and desire to cut down or stop, particularly students who smoked tobacco. This is a positive finding, indicating a promising opportunity to support behaviour change. However, some participants reported difficulty getting help. We found need was not evenly spread; Māori, Pacific and LGBTQ+ youth, those aged under 16 years and those living in small towns, rural areas and the most socio-economically deprived communities had higher needs on many indicators. Our findings suggest these groups should be prioritised for prevention and early intervention.

Table 5: Difficulty getting help to stop smoking or alcohol/other drug use in the past 12 months, by demographic variables.

		Difficulty getting help to stop smoking among past month tobacco users				Difficulty getting help to stop alcohol or other drug use among past month alcohol and/or cannabis users			
		n[N]	% [95% CI]	OR [95% CI] unadjusted	P-value	n[N]	% [95% CI]	OR [95% CI] unadjusted	P-value
Total		49 [252]	18.5 [13.5–24.7]			88 [1,743]	5.1 [4.1–6.4]		
Age	<16	27 [112]	21.6 [14.1–31.6]	1.00	0.336	48 [698]	6.9 [5.1–9.2]	1.00	0.031
	16+	22 [140]	16.1 [10.1–24.9]	0.70 [0.33–1.49]		40 [1,047]	4.0 [2.7–5.8]	0.56 [0.33–0.97]	
Sex	Female	27 [155]	16.8 [10.8–25.1]	1.00	0.822	43 [971]	4.5 [3.1–6.4]	1.00	0.434
	Male	19 [93]	17.9 [10.7–28.4]	1.08 [0.53–2.14]		42 [763]	5.5 [3.9–7.8]	1.25 [0.70–2.21]	
Ethnic group	Non-Māori/non-Pacific	19 [120]	15.8 [9.6–25.1]	1.00	0.543	51 [1,173]	4.1 [3.0–5.6]	1.00	0.042
	Māori	18 [82]	20.6 [12.3–32.5]	1.38 [0.60–3.10]		26 [430]	7.5 [4.7–11.7]	1.88 [0.97–3.50]	
	Pacific	16 [64]	23.5 [14.4–36.0]	1.47 [0.63–3.33]		17 [203]	8.6 [5.6–13.0]	1.88 [1.03–3.24]	
LGBTQ+	No	35 [200]	16.4 [11.3–23.2]	1.00	0.095	65 [1,516]	4.6 [3.5–6.0]	1.00	0.120
	Yes	14 [52]	26.5 [15.3–41.9]	1.84 [0.85–3.82]		23 [227]	8.1 [4.2–14.9]	1.84 [0.79–3.89]	
Locale	Major urban	26 [144]	17.5 [11.1–26.6]	1.00	0.760	52 [980]	5.3 [4.0–7.0]	1.00	0.199
	Small town	10 [35]	21.5 [9.0–43.3]	1.29 [0.39–3.71]		11 [187]	6.6 [3.1–13.2]	1.25 [0.51–2.70]	
	Rural	8 [42]	22.6 [11.9–38.7]	1.38 [0.50–3.45]		13 [339]	3.1 [1.5–6.3]	0.57 [0.23–1.22]	

Table 5 (continued): Difficulty getting help to stop smoking or alcohol/other drug use in the past 12 months, by demographic variables.

		Difficulty getting help to stop smoking among past month tobacco users				Difficulty getting help to stop alcohol or other drug use among past month alcohol and/or cannabis users			
		n[N]	% [95% CI]	OR [95% CI] unadjusted	P-value	n[N]	% [95% CI]	OR [95% CI] unadjusted	P-value
Region	Tāmaki Makaurau	34 [170]	19.3 [13.0–27.6]	1.00	0.815	64 [1,146]	5.7 [4.4–7.2]	1.00	0.359
	Te Tai Tokerau	6 [39]	16.3 [9.5–26.6]	0.82 [0.38–1.59]		13 [270]	4.1[1.6–10.4]	0.71 [0.25–1.63]	
	Waikato	9 [43]	16.3 [7.1–33.2]	0.81 [0.28–2.05]		11 [327]	3.5 [1.5–7.7]	0.60 [0.24–1.26]	
Neighbourhood socio-economic deprivation	Least socio-economic deprivation	8 [45]	18.0 [9.0–32.7]	1.00	0.879	24 [520]	4.2 [2.7–6.4]	1.00	0.424
	Medium socio-economic deprivation	15 [77]	17.8 [10.1–29.5]	0.99 [0.36–2.81]		28 [605]	5.0 [3.6–7.0]	1.20 [0.73–2.01]	
	Most socio-economic deprivation	21 [99]	20.2 [13.6–29.0]	1.16 [0.49–2.88]		24 [381]	6.2 [4.0–9.5]	1.51 [0.79–2.91]	

95% CI= 95% confidence interval; OR = odds ratio; LGBTQ+ = lesbian, gay, bisexual, transgender, queer.
Statistically significant ORs and p-values are bolded.

Findings differed by drug and indicator, highlighting the benefit of using multiple indicators to gain a fuller understanding of drug harm prevention needs in this age group.

Our findings should be interpreted within Aotearoa's social context, where the acceptability of different drugs varies. Less socially accepted substances (e.g., tobacco, cannabis) were less commonly used than more accepted ones (e.g., alcohol, e-cigarettes). Notably, heavy use did not always align with high levels of worry or desire to cut down, possibly reflecting societal attitudes. For instance, worry and desire to cut down was generally lower for alcohol, a drug with high social acceptability, than for tobacco, which has become increasingly socially unacceptable in recent years.³¹ Relatedly, the relatively low proportion of students reporting difficulty accessing help to stop alcohol or drug use may reflect low levels of concern and help-seeking, rather than an abundance of appropriate and accessible support services.

In addition to permissive attitudes to some drugs, other barriers to help-seeking identified in previous research include lack of awareness of services, stigma, concerns about confidentiality and past experiences of racist or judgemental service providers.^{20,32–34} Because young people, particularly those from under-served communities, often do not seek help for drug issues, our findings about difficulty getting help (specifically “no” responses) are challenging to interpret but are likely to underestimate need.

Our findings align with previous studies that have identified significant unmet health need among Māori, Pacific and LGBTQ+ students, and those living in neighbourhoods with high socio-economic deprivation and in rural areas.^{20–22} In addition, we have identified significant unmet need for drug harm prevention among younger students (those under 16 years old) and those living in small towns (population 1,000–10,000 people). Younger adolescents are more vulnerable to drug harm than older adolescents, and their drug use may be linked to complex psychosocial needs.^{3,7} Accessible interventions for children under 16 years should be a priority, alongside other under-served groups. Whānau (family) based interventions may be needed, particularly for this younger age group.

Effective population-based measures to prevent or reduce tobacco and alcohol use in young people are well established,⁴ and while Aotearoa has a history of strong tobacco control, it lags behind other countries in alcohol control implementation.³⁵

Evidence is more limited for effective school-based programmes, family programmes and brief interventions to reduce drug use in adolescents;⁴ these are important areas for future research. Our study highlights the under-served populations such interventions should be tailored for. Previous research on barriers such as stigma, privacy concerns and mistrust—particularly among marginalised youth—highlights the importance of co-designed, culturally safe, youth-centred services.^{20,32} Digital interventions show promise,³⁶ but there is a need to adapt and test these in Aotearoa.

The strengths and limitations of this study should be considered when interpreting the findings. Strengths include a large, diverse sample and a survey design aimed at achieving a representative sample of secondary school students. However, drug use may be underestimated, as youth with poor school attendance or outside the school system—who may be at greater risk of drug use^{37,38}—were likely under-represented. As the survey was regional, findings may not generalise to other regions. E-cigarette findings reflect a period before cheap, high-nicotine vapes were widely available. The survey did not include questions about access to vaping cessation support, limiting analysis in this area. Continued research is needed to understand adolescent e-cigarette use and support needs in a rapidly evolving product and regulatory environment. Prevalence of “difficulty getting help” may be underestimated due to low help-seeking in this age group, and our findings should be considered alongside other research on help-seeking and unmet health needs in this population.^{20,32–34} While the data are now somewhat dated, Youth19 remains the most recent comprehensive survey of adolescent drug use, attitudes and health access in Aotearoa.

Conclusions

Many adolescents are concerned about their drug use and want to reduce it, yet getting appropriate help can be difficult. These findings suggest there are promising opportunities for drug harm prevention in Aotearoa. Our research identifies under-served populations including Māori, Pacific people, LGBTQ+ youth, younger adolescents and those living in small towns, or rural or socio-economically deprived areas. Addressing root causes of inequity is key to reducing drug-related harm and improving outcomes. Prevention action should centre the needs of under-served groups and span the intervention

continuum, from upstream efforts to address the commercial, structural and social determinants of health, to population-based policy interventions, and effective early intervention for young people who want to reduce their drug use. Although evidence-based policy interventions exist, Aotearoa has not fully adopted them;

weak alcohol control is a notable shortfall to be addressed. Prioritising research and responsive support for youth and their whānau will help Aotearoa to prevent drug harm before it takes hold, thereby building healthier futures and stronger communities.

COMPETING INTERESTS

KW is the co-chair of the alcohol expert panel for Health Coalition Aotearoa – Te Rōpū Apārangi Waipiro.

EC reports: payment or honoraria from Princeton Behavioural Health; stock in DBT NZ.

JB reports consulting fees from the Ministry of Social Development, The University of Auckland and the Government of South Australia. JB is the Secretary of Public Health Association, Wellington Branch and a Member of Smokefree Expert Advisory Group, Health Coalition Aotearoa – Te Rōpū Apārangi Waipiro.

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Transfer of care and inbox management in primary care: a survey on medico-legal responsibility awareness and administrative burden in Aotearoa New Zealand

Albert Wu

ABSTRACT

BACKGROUND: Copying results to a patient's primary care provider confers a medico-legal responsibility to take action, which can complicate transfer of care. This practice contributes to administrative burden and creates uncertainty around the continuity of patient care. We aimed to survey primary care, with a focus on general practitioners (GPs), regarding their medico-legal awareness, preferences regarding receiving copied results, views on when transfer of care should happen, work-life balance, career pathway and the administrative burden (non-patient-facing clinical time) within their total clinical work hours.

METHODS: This was an anonymous, cross-sectional survey for clinically active primary care clinicians (GPs, urgent care physicians, nurse practitioners [NPs]) in the Northern region of Aotearoa New Zealand. The survey link was open from August to October 2023 and distributed via email, promoted during webinars and shared on social media.

RESULTS: A total of 470 eligible responses were collected: 428 GPs, 15 urgent care physicians, 18 NPs and 9 doctors that identify as "other primary care". Across the professions, 34% were unaware of the medico-legal responsibilities of being copied into results they did not initiate. With the exception of NPs, most primary care clinicians prefer to not be copied to radiology, histology, microbiology, haematology and biochemistry results they did not order. Four out of five of participants agreed that any results copied to primary care should involve prior discussion and acceptance by a relevant clinician. Although GPs and NPs reported poorer work-life balance, lower job satisfaction and higher rates of burnout compared with the other primary care professions, all professions have seen reductions in their patient-facing hours in the past 5 years, with increased administrative burden identified as a major contributing factor. Indeed, 47.7% of the GPs surveyed stated their intent to leave primary care within the next 5 years. The median proportion of non-patient-facing clinical hours as part of total clinical hours was 31% for GPs, 17% for urgent care physicians, and 31% for both NPs and other primary care professionals. Among GPs, a higher proportion of non-patient-facing clinical work was associated with older age, female gender, other non-European ethnicity, holding vocational registration in general practice, more years of general practice experience, having a personal list of enrolled patients and working in a non-Very Low Cost Access practice. However, medico-legal awareness of copied results was not associated with an increased proportion of non-patient-facing clinical work.

CONCLUSION: A gap in medico-legal knowledge related to test result responsibility exists within the primary care workforce. While this deficit was not linked to increased time spent on non-patient-facing clinical work, the majority of clinicians expressed a preference to not be routinely copied into test results unless a closed loop communication process with the ordering clinician is established. Improving the viability of primary care as a profession and patient care productivity will require coordinated efforts between primary care providers and Health New Zealand – Te Whatu Ora to reform current practices and uphold the principles of "Transfer of Care and Test Results Responsibility".

"I spent 10–15 minutes a day just dealing with copied inpatient radiology reports from the hospital; that's at least 60 minutes a week and 48 hours a year." – One general practitioner

Transfer of care is defined as a series of steps intended to maintain coordinated and continuous healthcare as patients move between different physical locations or levels of care.^{1,2} Current mechanisms of transfer of care in Aotearoa New Zealand are known to increase primary care's administrative burden and uncertainty as to who is clinically responsible for ongoing patient care. Significant contributors

include routinely copied radiology, laboratory and histology reports for inpatient and outpatient encounters by hospital and specialist services (HSS) as well as unidirectional non-closed loop transfer of care from electronic discharge summaries (EDS). Consequently, multiple adverse patient events have resulted, leading to investigation by the Health and Disability Commissioner.^{3,4} Copying results to another clinician is initiated either manually on the paper request form or a tick box on the electronic order form. Sometimes, there are even “built-in” processes wherein the HSS requester has no control over whether a copy is sent to the patient’s enrolled primary care clinician. Medico-legally, there is an expectation for primary care clinicians to act on significant abnormal results if they are a recipient of this copied information, even though they did not order the test and often are not aware of the clinical context.^{5,6}

Administrative burdens, especially relating to the electronic health record (EHR), are well-documented contributors to job dissatisfaction, reduced patient-facing time, cognitive overload and increased burnout among primary care clinicians and represent a significant challenge for workforce retention.^{7,8,9,10}

Despite the introduction of TestSafe (an online web portal that allows Northern region primary care clinicians to access all test results ordered by HSS) in 2010, the widespread culture of sending copied results to primary care has persisted and continues to grow, especially as healthcare documentation is seeing an increase in digital adoption.

In April 2024, Te Whatu Ora – Health New Zealand published a guidance document titled “Transfer of Care and Test Results Responsibility” which outlined principles to ensure test results are followed up safely in both inpatient and outpatient settings.¹¹ It affirms that the clinician who ordered the test is responsible for reviewing and actioning the results regardless of subsequent transfer of care, unless explicitly agreed to and documented. If action is required when copying results to another clinician, a documented handover, with agreement from the receiving clinician to accept the responsibility, involving a closed loop communication, is expected. Finally, as part of safety netting, any clinician copied into a result which is significantly abnormal needs to ensure appropriate action has been taken. Unfortunately, the document does not offer further recommendations on how these principles can be operationalised as they are not currently common practice.

Additionally, access to general practice in

Aotearoa New Zealand continues to decline in response to factors such as increased patient complexity and clinical demand, a capitation funding formula that is slow to adapt and a workforce shortage from both an intake and exit perspective.¹² In the 2024 Ministry of Health – Manatū Hauora survey,¹³ 75.6% of adults and 66.6% of children reported visiting general practice at least once in the past 12 months (compared with 78.9% and 74.5% respectively in 2019). “Time taken to get an appointment was too long” was the most significant barrier to general practice access (25.7% of adults and 18.5% of children in 2024, 21.2% and 14.8% in 2023 and 11.6% and 8% in 2022), and the rates of patients who visited the Emergency Department at least once in the past 12 months are also on the rise (17.8% of adults and 21.3% of children in 2024 versus 14.2% and 12.7% in 2020). This is a worrying trend as international evidence has consistently highlighted the importance of investing in primary care as a critical solution to addressing rising demand on HSS and achieving downstream savings in the healthcare system.^{14,15,16,17}

This study aimed to assess primary care clinicians’ preferences regarding transfer of care in the Northern region. We hypothesised that most clinicians would opt out of receiving copied results when variables such as medico-legal responsibility and sustainability of their profession were considered. Additionally, we sought to evaluate the proportion of non-patient-facing clinical time spent on administrative tasks as well as clinician wellbeing and long-term career plans.

Methods

This was an anonymous cross-sectional survey designed for clinically active primary care clinicians (general practitioners [GPs], urgent care physicians, nurse practitioners [NPs]) whose main place of work is in the Northern region. The Northern region encompasses four districts (previously known as district health boards), namely Te Tai Tokerau, Waitematā, Te Toka Tumai Auckland and Counties Manukau; it also comprises 37.7% of Aotearoa New Zealand’s total population. These geographical locations were selected due to TestSafe access and coverage for primary care.

Survey content development was designed with input from Medical Protection Society advisors, the primary care advisor from the Health and Disability Commission, clinical directors from

the primary health organisations (PHOs) in the Northern region and local GPs. The survey contained 47 questions in total and was largely multi-choice (see Appendix A for full survey questions).

The survey was hosted on Research Electronic Data Capture (REDCap) and distributed electronically to primary care clinicians with support from the PHOs, the Royal New Zealand College of General Practitioners (RNZCGP), the Royal New Zealand College of Urgent Care (RNZCUC), Nurse Practitioner New Zealand (NPNZ) and the Goodfellow Unit (an educational organisation for primary care operating out of the Department of General Practice and Primary Health Care at the University of Auckland). Additional distribution was through a private Facebook group consisting of GPs in Aotearoa New Zealand with verified identity. The survey link was active over a 2-month period from August 2023 to October 2023.

The co-primary endpoints were: the proportion of primary care clinicians who were aware of their medico-legal responsibility upon being copied into tests they did not initiate; and the proportion of primary care clinicians who preferred to receive these copied results in their electronic inbox. Secondary outcomes evaluated primary care professionals' preference on transfer of care, education on discharge summary composition, number of patient-facing versus non-patient-facing clinical hours, career trajectory and current job satisfaction. Respondents were asked to exclude any off-site teaching (e.g., lecturing at a university), continuing medical education and any business related administration when calculating the total hours spent on clinical work. Hours spent beyond their usual worktime were to be included, e.g., working through breaks or remotely checking their electronic inbox after hours and during weekends.

Power calculation

Based on Te Kaunihera Rata o Aotearoa | Medical Council of New Zealand (MCNZ) data, 1533 doctors work as GPs and 122 doctors work in urgent care in the Northern region.¹⁸ Based on 95% confidence, a 5% margin of error and a conservative estimated response distribution of 50% and 80% power, the number of respondents required was calculated at 308 for GPs and 93 for urgent care physicians. Given there were no specific data available for the number of NPs working in primary care, we used estimates from a recent New Zealand Nursing Council report, which estimated 60% of 702 NPs were working in primary

care, and further extrapolated that an estimated 39.7% were working in the Northern Region (using the GP distribution ratios in Aotearoa New Zealand).¹⁹ Thus, 117 NP respondents were required to reach the same power calculation for GPs and urgent care physicians.

Statistical analysis plan

Descriptive statistics were used to summarise participant characteristics and survey responses, with frequencies and percentages reported for categorical variables and medians with interquartile ranges for continuous variables. The Wald method was used to calculate 95% confidence intervals. Comparisons between the GP subgroup and the Te Kaunihera Rata o Aotearoa | Medical Council of New Zealand 2022 workforce survey cohort were performed using Pearson's Chi-squared test. Fisher's exact test was used to assess differences in test result responsibilities and opinions on care transfer across the four professional groups surveyed.

The distribution of total, patient-facing and non-patient-facing weekly working hours by profession was analysed using one-way analysis of variance (ANOVA) or Kruskal–Wallis one-way analysis of variance on ranks, depending on data distribution. Improbable responses, such as total work hours exceeding 80 hours per week or patient-facing hours exceeding total reported hours, were excluded to maintain data integrity. Sub-group analyses for GPs explored associations between the proportion of non-patient-facing hours and various participant characteristics, as well as survey responses relating to medico-legal awareness and preferences for routine inbox items, using the Kruskal–Wallis one-way analysis of variance on ranks. *Post hoc* pairwise comparisons were performed using Tukey's Honest Significant Difference test or Dunn's Test for Multiple Comparisons, as appropriate. Statistical significance was set at $p < 0.05$, and $p < 0.025$ for pairwise *post hoc* testing.

Additionally, multivariate negative binomial regression was used to analyse the proportion of non-patient-facing hours worked per week, examining the influence of age, gender, ethnicity, vocational scope qualification, years of primary care experience, and practice type (Cornerstone certified, Very Low Cost Access [VLCA], set number of enrolled patients). Each factor was assessed individually (univariate) and collectively (multivariate) to identify which remained significant after accounting for potential confounding.

Ethics approval

Ethics approval for the study was granted by the Auckland Health Research Ethics Committee in August 2023 (reference: AH26309).

Results

Over the 2-month survey period, we received a total of 506 responses. Of these, 36 responses were excluded as their main work site was not located within the four districts of the Northern region. Out of the remaining 470 responses, 428 identified their primary role as GPs, 15 as urgent care physicians, 9 working in other primary care (such as aged residential care, hospice care, skin cancer and student health) and 18 as NPs. While over 99% of survey responses were complete, data analysis shown in the tables exclude any missing responses.

The survey response rate is estimated at 27.9% for GPs, 12.3% for urgent care physicians and 10.8% for NPs in the Northern region.^{18,19}

Respondent characteristics

Respondent demographics and practice characteristics are displayed in Table 1. NPs are reported together due to the small numbers of respondents (16 in general practice and two in other primary care). Ethnicity reporting follows the same single prioritised ethnicity method as used in the 2022 MCNZ workforce survey.¹⁸

The largest group of respondents are from the 55–64 years age group, followed by the 35–44 years age group. Of the respondents, 60.9% are female and 46% identify as NZ European/Pākehā for their ethnicity. Over 80% of respondents hold a specific

vocational scope qualification and have over 6 years of experience in primary care (minimum 3 years training for GPs and 4 years each for urgent care physicians and NPs). Some general practice and urgent care respondents do not hold their respective vocational scopes as this is not legally required in Aotearoa New Zealand. Nearly 80% respondents were from Cornerstone accredited practices that have voluntarily obtained the RNZCGP certification for equitable and high-quality care. Nearly 40% respondents work in VLCA practices, which receive extra funding to reduce patient co-payments for serving high-needs populations.

General practice operates largely in two models: a set number of patients enrolled directly under a primary care clinician's name, where all associated results and notifications go to a specific clinician's inbox; or administrative work from all enrolled patients are shared amongst all doctors within one practice. More GPs (63.1%) identified as being in the former model of care.

There were 428 GP respondents (exceeding the 308 required to power the study) where a meaningful statistical comparison was possible with MCNZ data of doctors reporting working predominantly in general practice (Table 2). Our GP respondents' age and gender distributions were statistically different to MCNZ data, with higher representation for those in the under 35 years, 35–44 years and 45–54 years age groups, and those identifying as female. Ethnicity and their main work site district in the Northern region were not statistically different. However, it should be noted that MCNZ identifies main work location based on a doctor's annual practicing certificate renewal address.

Table 1: Characteristics of survey respondents by profession.

	All	General practitioner	Urgent care physician	Other primary care physician	Nurse practitioner ^a
Age					
<35 years	72 (15.3)	64 (15.0)	4 (26.7)	2 (22.2)	2 (11.1)
35–44 years	118 (25.1)	109 (25.5)	2 (13.3)	2 (22.2)	5 (27.8)
45–54 years	89 (18.9)	83 (19.4)	1 (6.7)	1 (11.1)	4 (22.2)
55–64 years	148 (31.5)	131 (30.6)	7 (46.7)	4 (44.4)	6 (33.3)
≥65 years	43 (9.1)	41 (9.6)	1 (6.7)	-	1 (5.6)
Gender					
Female	286 (60.9)	259 (60.5)	8 (53.3)	4 (44.4)	15 (83.3)
Male	184 (39.1)	169 (39.5)	7 (46.7)	5 (55.6)	3 (16.7)
Other	-	-	-	-	-

Table 1 (continued): Characteristics of survey respondents by profession.

Ethnicity^b					
Māori	30 (6.4)	23 (5.4)	1 (6.7)	-	6 (33.3)
Pacific peoples	19 (4.0)	17 (4.0)	1 (6.7)	1 (11.1)	-
Indian	43 (9.1)	41 (9.6)	-	2 (22.2)	-
Chinese	59 (12.6)	53 (12.4)	5 (33.3)	-	1 (5.6)
Other non-European	51 (10.9)	45 (10.5)	5 (33.3)	1 (11.1)	-
Other European	52 (11.1)	48 (11.2)	1 (6.7)	2 (22.2)	1 (5.6)
NZ European/Pākehā	216 (46.0)	201 (47.0)	2 (13.3)	3 (33.3)	10 (55.6)
Northern region district (main work site)					
Te Tai Tokerau (Northland)	55 (11.7)	48 (11.2)	1 (6.7)	2 (22.2)	4 (22.2)
Waitematā	158 (33.6)	147 (34.3)	4 (26.7)	4 (44.4)	3 (16.7)
Te Toka Tumai Auckland	147 (31.3)	132 (30.8)	7 (46.7)	1 (11.1)	7 (38.9)
Counties Manukau	110 (23.4)	101 (23.6)	3 (20.0)	2 (22.2)	4 (22.2)
Vocational scope					
1st year trainee / registrar	9 (1.9)	8 (1.9)	1 (6.7)	-	-
2nd year and above trainee / registrar	56 (11.9)	53 (12.4)	2 (13.3)	1 (11.1)	-
Vocational scope for FRNZCGP / FRNZ-CUC / NP	387 (82.3)	350 (81.8)	11 (73.3)	8 (88.9)	18 (100)
Does not hold vocational scope in primary care	18 (3.8)	17 (4.0)	1 (6.7)	-	-
Primary care experience^c (includes years spent training)					
<3 years	39 (8.4)	35 (8.2)	1 (6.7)	1 (11.1)	2 (11.1)
3–5 years	44 (9.4)	40 (9.4)	3 (20.0)	-	1 (5.6)
6–10 years	63 (13.5)	54 (12.7)	6 (40.0)	2 (22.2)	1 (5.6)
>10 years	321 (68.7)	296 (69.6)	5 (33.3)	6 (66.7)	14 (77.8)
Workplace characteristic					
Cornerstone accredited	374 (79.6)	345 (80.6)	10 (66.7)	6 (66.7)	13 (72.2)
Very Low Cost Access	187 (39.8)	172 (40.2)	1 (6.7)	2 (22.2)	12 (66.7)
Have patients enrolled under their name	281 (59.8)	270 (63.1)	1 (6.7)	2 (22.2)	8 (44.4)
Communication type received into inbox					
All communication	432 (91.9)	394 (92.1)	12 (80.0)	8 (88.9)	18 (100)
All communication excluding routine screening review by practice nurse e.g., cervical screening or breast screening	27 (5.7)	24 (5.6)	3 (20.0)	-	-
Abnormal reports only	5 (1.1)	5 (1.2)	-	-	-
Other	6 (1.3)	5 (1.2)	-	1 (11.1)	-

Data are presented as N (%). Percentages are based on non-missing responses for each category.

^a Among the 18 nurse practitioner respondents, 16 work in general practice and two work in other primary care.

^b Single ethnicity as per Statistics New Zealand's prioritisation standard (listed in order of priority).

^c Variable contains three missing responses. Percentages based on total responses available.

Table 2: General practitioner respondent demographics in comparison to Te Kaunihera Rata o Aotearoa | Medical Council of New Zealand (MCNZ) data.¹⁸

		General practitioners (%)	MCNZ data (%)	p value
Age	<35 years	64 (15.0)	137 (8.9)	< 0.001
	35–44 years	109 (25.5)	325 (21.2)	
	45–54 years	83 (19.4)	295 (19.2)	
	55–64 years	131 (30.6)	527 (34.4)	
	≥65 years	41 (9.6)	249 (16.2)	
Gender	Female	259 (60.5)	820 (53.5)	0.011
	Male	169 (39.5)	713 (46.5)	
Ethnicity^a	Māori	23 (5.4)	65 (4.4)	0.20
	Pacific peoples	17 (4.0)	61 (4.1)	
	Indian	41 (9.6)	155 (10.5)	
	Chinese	53 (12.4)	166 (11.2)	
	Other non-European	45 (10.5)	229 (15.5)	
	Other European	48 (11.2)	174 (11.8)	
	NZ European/Pākehā	201 (47.0)	630 (42.6)	
Northern region district (main work site)	Te Tai Tokerau (Northland)	48 (11.2)	162 (10.6)	0.25
	Waitematā	147 (34.4)	461 (30.1)	
	Te Toka Tumai Auckland	132 (30.8)	543 (35.4)	
	Counties Manukau	101 (23.6)	367 (23.9)	

Data are presented as N (%).

p values from Pearson's Chi-squared test. Significant p values (p<0.05) shown in bold.

^a Single ethnicity as per Statistics New Zealand's prioritisation standard (listed in order of priority).

Medico-legal awareness, Transfer of Care and Test Results Responsibility (Table 3)

Two-thirds (66%) of respondents were aware of their medico-legal responsibility when being copied into results of tests they did not initiate. However, 68.4% of these respondents were only made recently aware in the past 3 months.

With the exception of NPs, most respondents had a preference to not receive copied radiology, histology, microbiology, haematology and biochemistry test results. Preference for endoscopy and cardiology test results were split evenly. Doctors largely preferred not to be sent notifications related to outpatient clinic referrals initiated by HSS, but opinions were split among NPs. Hospital admission notifications were generally preferred by participants (61.9%) in comparison to hospital

discharge notifications (37.7%), which would be a duplicate to the EDS (if finalised at time of patient discharge).

There was strong support from almost all respondents to use the National Enrolment Service (NES) database (patient enrolment information held by the Ministry of Health – Manatū Hauora which determines General Practice capitation funding) as source of truth for where HSS direct all patient-related communications to, including copied reports and notifications.

From a transfer of care perspective, four out of five respondents agreed with the statement that “any results copied to primary care (including the associated responsibilities) need to be discussed with and accepted by a relevant clinician in primary care (e.g. GP, NP or a practice nurse)”.

An electronic system that would allow the recipient to accept or decline the transfer of care requests was the most preferred communication option (48.7%), followed by a discussion over the phone (33.4%).

Most respondents agreed that there was a need for standardised education on discharge summary composition both at medical student and junior doctor levels.

Work-life balance and career trajectory (Table 4)

Of the respondents, 41.5% did not feel they were able to maintain a good work-life balance. Despite similar burnout rates in GPs and NPs, urgent care

physicians still reported positively regarding their work satisfaction (86.6% were “moderately satisfied” or “very satisfied”). Regardless of the reported wellbeing indicators, all primary care professions in the survey have reported an overall reduction in their patient-facing hours in the past 5 years, with increased administrative burden as one of the main contributors.

Of the respondents, 26.4% expressed an intention to leave primary care in the next 3 years, but only GPs identified that increased administrative burden was the main reason to alter their career trajectory. Overall, GP respondents were the least inclined (35.7%) to recommend their profession as a career in Aotearoa New Zealand.

Table 3: Medico-legal awareness, Transfer of Care and Test Result Responsibility preference by primary care profession.

Note: only affirmative results are displayed unless stated otherwise	All	General practitioner	Urgent care physician	Other primary care physician	Nurse practitioner	p value
TestSafe						
Awareness	467 (99.4)	426 (99.5)	15 (100)	9 (100)	17 (94.4)	0.25
Use	453 (97)	413 (96.9)	15 (100)	8 (88.9)	17 (100)	0.44
Awareness of medico-legal responsibilities *						
There is a responsibility for primary care to act on significant abnormal results when they arrive in your inbox or when you view it on TestSafe, regardless of who ordered the investigation in the first place	310 (66)	278 (65)	11 (73.3)	7 (77.8)	14 (77.8)	0.60
Became aware >3 months ago	98 (31.6)	72 (25.9)	8 (72.7)	6 (85.7)	12 (85.7)	0.83
Became aware <3 months	212 (68.4)	206 (74.1)	3 (27.3)	1 (14.3)	2 (14.3)	
Filing patient-related results and notifications (e.g., declined outpatient referrals) not initiated by you is equivalent to acknowledging the result and agreeing to take appropriate action in a timely manner	240 (51.1)	214 (50)	10 (66.7)	7 (77.8)	9 (50)	0.25
Preferences for routine inbox items *						
Radiology reports	166 (35.3)	145 (33.9)	6 (40)	2 (22.2)	13 (72.2)	0.0087
Histology reports	173 (36.8)	153 (35.7)	6 (40)	3 (33.3)	11 (61.1)	0.18
Endoscopy reports	237 (50.4)	218 (50.9)	3 (20)	4 (44.4)	12 (66.7)	0.048
Cardiology investigations	230 (48.9)	204 (47.7)	7 (46.7)	4 (44.4)	15 (83.3)	0.024
Microbiology reports	97 (20.6)	77 (18)	5 (33.3)	3 (33.3)	12 (66.7)	<0.001

Table 3 (continued): Medico-legal awareness, Transfer of Care and Test Result Responsibility preference by primary care profession.

Haematology and biochemistry results		86 (18.3)	70 (16.4)	3 (20)	3 (33.3)	10 (55.6)	<0.001
Outpatient service referrals completed by the inpatient team		96 (20.4)	81 (18.9)	3 (20)	3 (33.3)	9 (50)	0.013
Dates of future outpatient clinic appointments		124 (26.4)	108 (25.2)	4 (26.7)	3 (33.3)	9 (50)	0.12
Hospital admission notifications		291 (61.9)	264 (61.7)	8 (53.3)	6 (66.7)	13 (72.2)	0.72
Hospital discharge notifications ^a		177 (37.7)	158 (36.9)	6 (40)	4 (44.4)	9 (50)	0.65
NES as source of truth							
For patient primary care practice enrolment		461 (98.1)	419 (97.9)	15 (100)	9 (100)	18 (100)	1.00
To identify responsible primary care clinician for patient		449 (95.5)	408 (95.3)	14 (93.3)	9 (100)	18 (100)	0.74
Agreement with proposed communication changes							
Results cc'd to primary care must be discussed with and accepted by the relevant clinician or nurse		377 (80.2)	348 (81.3)	9 (60)	7 (77.8)	13 (72.2)	0.14
Draft of outpatient clinic letters viewable on TestSafe		386 (82.1)	351 (82)	13 (86.7)	7 (77.8)	15 (83.3)	0.96
Use of standardised headings for all regional communications		467 (99.4)	425 (99.3)	15 (100)	9 (100)	18 (100)	1.00
Formalised communication and feedback system between primary care and hospital		449 (95.5)	408 (95.3)	15 (100)	9 (100)	17 (94.4)	0.87
Most preferred option to manage "Transfer of Care" requests							
Electronic system for accepting/declining requests		229 (48.7)	205 (47.9)	4 (26.7)	7 (77.8)	13 (72.2)	0.018
Requests need to be discussed over the phone		157 (33.4)	150 (35)	5 (33.3)	1 (11.1)	1 (5.6)	0.021
Keep current status quo but utilise a formal feedback system to hospital regarding any communication concerns		84 (17.9)	73 (17.1)	6 (40)	1 (11.1)	4 (22.2)	0.13
Discharge summary education							
NZ medical schools' curriculum should include training on composing discharge summaries ^a	Yes	394 (84)	361 (84.3)	9 (60)	8 (88.9)	16 (94.1)	0.06
	No	75 (16)	67 (15.7)	6 (40)	1 (11.1)	1 (5.9)	

Table 3 (continued): Medico-legal awareness, Transfer of Care and Test Result Responsibility preference by primary care profession.

NZ hospitals should standardise Officer education on composing discharge summaries ^b	Yes	447 (95.9)	410 (96.2)	12 (80)	8 (100)	17 (100)	0.06
	No	19 (4.1)	16 (3.8)	3 (20)	0 (0)	0 (0)	

Only affirmative results are displayed unless specified otherwise.

Data represents frequency (%). Percentages based on total responses given (i.e., it excludes missing responses).

p values from Fisher's exact test (testing for a difference between the four professions). Significant p values ($p < 0.05$) shown in bold.

NES = National Enrolment Service.

* Denotes co-primary outcomes of survey

^a Variable contains one missing response

^b Variable contains four missing responses

Table 4: Work-life balance and career trajectory reported by primary care profession (secondary outcomes of survey).

		All	General practitioner	Urgent care physician	Other primary care physician	Nurse practitioner	p value
Do you feel you are currently able to maintain a good work-life balance?	Yes	195 (41.5)	174 (40.7)	9 (60.0)	6 (66.7)	6 (33.3)	0.1721
	No	275 (58.5)	254 (59.3)	6 (40.0)	3 (33.3)	12 (66.7)	
How would you rate yourself in terms of your wellbeing with regards to burnout?	Not burnt out	115 (24.5)	99 (23.1)	5 (33.33)	7 (77.8)	4 (22.2)	0.04728
	Somewhat burnt-out	255 (54.3)	236 (55.1)	7 (46.7)	2 (22.2)	10 (55.6)	
	Burnt-out	100 (21.3)	93 (21.7)	3 (20.0)	-	4 (22.2)	
How would you rate the satisfaction with your role at your main work site?	Very satisfied	60 (12.8)	50 (11.7)	2 (13.3)	5 (55.6)	3 (16.7)	0.007636
	Moderately satisfied	213 (45.3)	194 (45.3)	11 (73.3)	4 (44.4)	4 (22.2)	
	Unsure	82 (17.4)	73 (17.1)	2 (13.3)	-	7 (38.9)	
	Moderately dissatisfied	80 (17.0)	77 (18.0)	-	-	3 (16.7)	
	Very dissatisfied	35 (7.4)	34 (7.9)	-	-	1 (5.6)	
Have you decreased your patient-facing hours in the past 5 years?	Yes	319 (67.9)	289 (67.5)	10 (66.7)	5 (55.6)	15 (83.3)	0.4409
	No	151 (32.1)	139 (32.5)	5 (33.3)	4 (44.4)	3 (16.7)	

Table 4 (continued): Work-life balance and career trajectory reported by primary care profession (secondary outcomes of survey).

If “Yes”, has increased administrative burden from paperwork been one of the main reasons to reduce patient-facing hours?	Yes	275 (86.2)	254 (87.9)	6 (60)	4 (80)	11 (73.3)	0.2149
	No	44 (13.8)	35 (12.1)	4 (40)	1 (20)	4 (26.7)	
When do you intend to retire or leave primary care?	Less than 3 years	124 (26.4)	119 (27.8)	1 (6.7)	-	4 (22.2)	0.2433
	3-5 years	93 (19.8)	85 (19.9)	3 (20.0)	2 (22.2)	3 (16.7)	
	Over 5 years	253 (53.8)	224 (52.3)	11 (73.3)	7 (77.8)	11 (61.1)	
Has increased administrative burden from paperwork been one of the main reasons to move up retirement plans or leave primary care earlier?	Yes	290 (61.7)	278 (64.9)	4 (26.7)	4 (44.4)	4 (22.2)	0.000030
	No	180 (38.3)	150 (35.1)	11 (73.3)	5 (55.6)	14 (77.8)	
Would you recommend primary care as a career in Aotearoa New Zealand?	Yes	132 (28.1)	119 (27.8)	4 (26.7)	3 (33.3)	6 (33.3)	0.5532
	Neutral	170 (36.2)	150 (35.1)	8 (53.3)	4 (44.4)	8 (44.4)	
	No	168 (35.7)	159 (37.1)	3 (20.0)	2 (22.2)	4 (22.2)	

Data represents frequency (%).

p values from Fisher's exact test (testing for a difference between the four professions). Significant p values ($p < 0.05$) shown in bold.

Non-patient-facing clinical time

Nine improbable responses were excluded from data analysis (Table 5) where the reported patient-facing hours exceeded total clinical hours reported or where the total hours exceeded 80 hours per week.

Primary care clinicians reported working a median of 37 hours in total per week (Interquartile Range [IQR]: 28–45), of which 30% (IQR: 20–43%) was non-patient-facing (Table 5). While total hours did not significantly differ between the four professions, urgent care physicians were found to spend proportionally less time on non-patient-facing tasks compared to GPs, NPs and other primary care physicians.

Further subgroup analysis, conducted specifically for GPs, examined the proportion of non-patient-facing clinical time in relation to respondent characteristics and their preferences for receiving specific copied test results (Table 6). *Post hoc* analysis showed significantly

lower proportions of non-patient-facing hours by GPs aged <35 years (versus GPs aged 45 years and older) or 35–44 years (compared with those over the age of 65 years), GPs of Other non-European ethnicity (compared with Chinese, Indian, Other European and New Zealand European GPs), and GP trainees/registrar who were 2nd year and above (compared with those with a vocational scope in general practice; Dunn's Test for Multiple Comparisons, $p < 0.025$). Significantly higher proportions of non-patient-facing hours were reported by female GPs, GPs with over 10 years of experience (compared with GPs with less than 5 years' experience), GPs with a set number of patients enrolled under their care and GPs who work in a non-VLCA practice (Dunn's Test for Multiple Comparisons, all $p < 0.025$). Awareness of secondary medico-legal responsibility and preference to receive copied reports were not shown to affect the participants' proportion of non-patient-facing clinical time.

Table 5: Weekly total, patient-facing and non-patient-facing clinical hours by primary care profession (secondary outcomes of survey).

	All	General practitioner	Urgent care physician	Other primary care physician	Nurse practitioner	p value
Excluded responses	9	8	0	1	0	
Total hours per week	37 [28, 45]	37 [28, 45]	40 [31, 45]	31 [16, 46]	40 [28, 49]	0.43
Patient-facing hours per week	25 [18, 32]	24 [18, 31]	32 [28, 40]	21 [8, 31]	30 [20, 32]	0.0082
Non-patient-facing hours per week	10 [6, 18]	10 [6, 18]	6 [4, 9]	10 [3, 18]	10 [6, 19]	0.012
Non-patient-facing percentage (%)	30 [20, 43]	31 [22, 44]	17 [11, 20]	31 [18, 41]	31 [20, 41]	0.00057

Data represents median [IQR].

N excludes nine improbable responses where patient-facing hours exceeded total hours reported or total hours ≥ 80 hours per week. p values from one-way ANOVA or Kruskal-Wallis one-way analysis of variance on ranks, as appropriate (testing for a difference between the four professions). Significant p values ($p < 0.05$) shown in bold.

Table 6: Proportion of non-patient-facing clinical hours among general practitioners. Analysis by demographics, clinic characteristics and survey responses.

Variable	Response	N	Non-patient-facing hour percentage (%)	p value
Age	<35 years	64	26.2 [20, 33.3]	0.0024
	35–44 years	105	30.2 [20.6, 40]	
	45–54 years	82	33.3 [25.4, 44.3]	
	55–64 years	128	33.3 [24, 47.3]	
	≥ 65 years	41	40 [24.2, 50]	
Gender	Female	254	33.3 [24, 46.5]	0.0018
	Male	166	28.6 [20, 39.6]	
Ethnicity	Māori	23	30.2 [20, 43.1]	0.0017
	Pacific peoples	17	33.3 [15.8, 37.5]	
	Indian	41	30 [20.8, 41.8]	
	Chinese	52	31.6 [24.1, 37.6]	
	Other non-European	43	23.8 [16.9, 33.3]	
	Other European	48	33.3 [21.9, 40]	
	NZ European	196	33.3 [25, 50]	
Health NZ district	Te Tai Tokerau (Northland)	47	31.6 [24.6, 46.2]	0.34
	Waitematā	145	31.4 [23.3, 42.9]	
	Te Toka Tumai Auckland	131	33.3 [23.6, 44.7]	
	Counties Manukau	97	30 [20, 40]	

Table 6 (continued): Proportion of non-patient-facing clinical hours among general practitioners. Analysis by demographics, clinic characteristics and survey responses.

Vocational scope / training status	1st year trainee/registrar	8	29.2 [10.9, 30.8]	0.033
	2nd year and above trainee/ registrar	49	28.6 [20, 38.5]	
	Vocational scope for FRNZCGP/FRNZCUC/nurse practitioner	346	33.3 [23.1, 45.5]	
	Does not hold vocational scope in primary care	17	30 [25, 35.7]	
Experience working in general practice (includes training)	>3 years	33	25 [12.2, 33.3]	0.00085
	3–5 years	40	27.9 [21, 36.6]	
	6–10 years	53	30 [23.1, 37.1]	
	<10 years	291	33.3 [25, 47]	
Has a set no. of patients enrolled under their name	Yes	264	33.3 [24, 44.5]	0.0050
	No	156	28.6 [20, 40]	
Works primarily in a Very Low Cost Access practice	Yes	169	28.6 [20, 37.5]	0.00004
	No	251	33.3 [25, 47.1]	
Works primarily in a Cornerstone practice	Yes	340	30.3 [21.1, 42.9]	0.11
	No	80	33.3 [25.0, 47.1]	
Current communication received through their electronic inbox	All communication	387	33.3 [22.2, 44.4]	0.32
	All communication exclud- ing routine screening results e.g., cervical screen- ing or breast screening	23	26.7 [24.3, 33]	
	Abnormal reports only	5	23.1 [23.1, 47.2]	
	Other	5	30 [20.8, 30]	
Awareness of medico-legal responsibilities				
There is a responsibility for pri- mary care to act on significant abnormal results when they arrive in your inbox or when you view it on TestSafe, regardless of who ordered the investigation in the first place	Yes	272	33.3 [23.7, 45.5]	0.25
	No	148	30.0 [20.8, 41.1]	
Filing patient-related results and notifications (e.g., declined out- patient referrals) not initiated by you is equivalent to acknowl- edging the result and agreeing to take appropriate action in a timely manner	Yes	209	32.7 [22.2, 45.5]	0.83
	No	211	30.4 [22.6, 42.6]	
Preferences for routine inbox items				
Radiology reports	Yes	143	30 [20, 40.4]	0.068
	No	277	33.3 [23.8, 44.4]	

Table 6 (continued): Proportion of non-patient-facing clinical hours among general practitioners. Analysis by demographics, clinic characteristics and survey responses.

Histology reports	Yes	151	30 [21.2, 40.4]	0.19
	No	269	33.3 [23.1, 44.4]	
Endoscopy reports	Yes	215	31.4 [22.6, 44.2]	0.73
	No	205	31.1 [22.2, 42.9]	
Cardiology investigations	Yes	201	30 [23.1, 41.7]	0.51
	No	219	33.3 [22, 44.4]	
Microbiology reports	Yes	75	29.4 [20.4, 40]	0.14
	No	345	33.3 [23.1, 44.4]	
Haematology and biochemistry results	Yes	68	30.4 [21.9, 43.1]	0.82
	No	352	31.4 [22.9, 43.8]	

Data represents N, median [IQR].

N excludes improbable responses where patient-facing hours exceeded total hours reported or total hours ≥ 80 hours per week.

p values from Kruskal–Wallis one-way analysis of variance on ranks. Significant p values ($p < 0.05$) shown in bold.

Discussion

This anonymous survey set out to clarify where front-line primary care clinicians stand on the topic of transfer of care and how it affects their proportion of non-patient-facing time, wellbeing and long-term career plan.

We found a substantial number of primary care clinicians that were not aware of their medico-legal responsibility when copied into results (over one in three for GPs, over one in four for urgent care and over one in five for other primary care and NPs). In fact, of the participants who were aware, only one in four became aware in the past 3 months, indicating the same survey would have yielded a result where less than half of the participants were aware of their medico-legal responsibility had the survey been disseminated 3 months prior. This follow-up question was added due to recent renewed interest in general practice on how to manage the continued surge of non-patient-facing clinical workload and webinars on this topic led by the author for education and survey recruitment purposes. These findings are in-line with other studies showing poor awareness in clinicians, including those in the HSS, in the respective medico-legal topics surveyed (e.g., documentation, confidentiality, consent, child protection, driving clearance), highlighting this field as a knowledge gap that commonly exists

across the workforce.^{20,21,22,23}

It was also confirmed with the medico-legal advisers that misdirected test results also confer the same secondary responsibility to the incorrectly copied clinician. At present, misdirection of results frequently occurs when HSS administrative staff do not check (or have access to) primary care enrolment details on the NES database during routine patient encounters. The default response is to update the primary care provider details on the HSS system based on what the patient reports. Misdirection of clinical information not only results in additional administrative and clinical burden to primary care to notify HSS and correct but confers a clinical risk for patients due to the time it takes for these reports to be redirected to the correct recipient. It is not uncommon that EDS would handover to primary care to follow-up pending or planned diagnostic tests for patients on discharge. Furthermore, there are times when the correct recipient for these electronic documents and results is “no recipient”, as the patient’s primary care enrolment has expired and not been renewed.

In patient safety literature, communication failure is widely recognised as one of the leading causes of adverse patient outcomes and, as a result, various versions of handover templates (e.g., SBAR, ISBAR, ISOBAR) and checklists (e.g., peri-operative surgical checklists) have been used to reduce communication errors.^{24,25,26,27,28}

However, when it comes to transferring of patient care back to the community, there is a stark contrast where there is no standardised education or expectation to utilise closed loop communication for the clinician completing the EDS document (often the most junior member on the team).

Furthermore, most doctors preferred not to receive radiology, histology, microbiology, haematology and biochemistry results that were not ordered by themselves as this creates confusion as to identifying the main responsible clinician, as well as it being unnecessary, as all Northern region primary care providers can access TestSafe. Although arguably this may result in an overall safer outcome for patients by having primary care act as an additional safety net for the requesting clinician, this contradicts Health New Zealand – Te Whatu Ora’s “Transfer of Care and Test Results Responsibility” and doesn’t include a closed loop communication that four out of five respondents in this survey have expressed support for.¹¹

Additional qualitative work will need to be done to understand why there is a split preference for endoscopy and cardiology reports. However, one of the possible contributing factors is that endoscopy reports are often also used as a transfer of care document, e.g., asking primary care to follow up on biopsy results to initiate *Helicobacter pylori* treatment or re-refer for repeat procedure in a few years’ time. It is uncommon for primary care to receive a separate transfer of care communication via a separate document. Inclination to receive cardiology investigations could be due to perceived usefulness of having these reports conveniently stored on the primary care patient management system (PMS), rather than needing to separately log onto TestSafe to retrieve the results.

With the exception of urgent care physicians, primary care professions with work more closely related to patient long-term care are noted to spend a median of 31% and average 33.5% of total hours on non-patient-facing clinical time. This was not unexpected due to a continued flow of discharge summaries, specialist clinic letters and diagnostic tests that are not always related to direct patient consultation. The RNZCGP conducted a study in 2024 and reported 30% of total work time spent on non-patient contact activities (different to this survey in that it included continued medical education and business-related administration as part of total work time).²⁹ Similar figures were noted in other studies; 23.7% from 142 family physicians by reviewing their

EHR event logs over a 3-year period and 25% from 1,343 members of the Ontario College of Family Physicians in a cross sectional survey.^{30,31} While the widespread introduction of EHR has been shown to improve efficiency in certain workflows and patient care, the subsequent increased time spent interacting with EHRs have also resulted in a wealth of literature noting increased associated physician burnout, not limited to primary care providers.^{32,33,34,35}

Proficiency in information technology systems (e.g., the ability to touch type, utilisation of artificial intelligence to take and summarise consultation notes or navigate the PMS with quick actions/smart phrases) were not evaluated in this survey due to the survey aim and length consideration, even though they have been identified to affect a clinician’s HER efficiency.^{36,37} Interestingly, while awareness of medico-legal responsibility or previous experience in medico-legal matters have been shown to affect clinician behaviour,^{38,39,40} we found no significant difference in the proportion of non-patient-facing clinical time spent for our GP respondents.

Our survey revealed significant issues with GPs’ work-life balance and career intentions in Aotearoa New Zealand. In fact, our GP respondents reported a stronger intention to retire earlier compared with a 2024 RNZCGP workforce survey (which only included GPs with specialist vocational scope qualification); 30% versus 21% in the next 3 years, 21% versus 23% in 3 to 5 years and 49% versus 56% in over 5 years.⁴¹ Despite a recent commitment by Health New Zealand – Te Whatu Ora to achieve 300 general practice registrar intakes per year by 2026 and increased funding for training NPs, our survey has highlighted a fundamental problem of the perceived unattractiveness of general practice as a viable career option.⁴² Efforts to increase intake will be significantly undermined if workforce output continues to decline from the hidden cost of administrative burden (i.e., reduction of patient-facing clinical hours) and failure to retain our training and emerging workforce.

Limitations and strengths

One of the limitations of this study was the low numbers of non-GP respondents. While it is true they can be recipients of EDSs and copied results, the low response was accepted at the end of the survey closing period. For urgent care this was due to recognition of the acute and episodic nature of their work. For NPs and other primary care doctors, this was due to the difficulty in

ascertaining their numbers in the Northern region, and it also became apparent that there were limited outreach modalities for these two professions.

Even though we recognise the limitations of extrapolating findings, the transfer of care mechanism and circumstances described in the study is not unique to the Northern region. All regions in Aotearoa New Zealand utilise EDS and clinic letters as their main method for transfer of patient care. Despite TestSafe being unique to the Northern region, South Island | Te Waipounamu region has HealthOne, and most primary care providers in the Midland and Central regions have some form of limited access to view hospital diagnostic results.

A strength of this paper lies in the comprehensive nature of transfer of care related topics covered in the survey. Medico-legal awareness was also ascertained early in the survey to ensure this is not a confounding factor with analysis of all subsequent responses both in preference to receive copied results and the impact on their hours.

Suggested future research directions include repeating the survey for primary care providers in different regions, further qualitative work on identifying the reasoning for a clinician's pref-

erence to receive copied results and modifying the survey to ascertain the viewpoints of HSS clinicians regarding their awareness of medico-legal responsibility of copied results and preference for transfer of care.

Conclusion

Our survey aimed to evaluate primary care professionals' understanding and preferences in various aspects of transfer of care including their long-term career trajectory. It affirms that there is currently a medico-legal knowledge gap present in our primary care workforce. While it does not seem to affect clinician time spent on non-patient-facing clinical work, most would prefer not to be routinely copied into results of tests they did not order unless a closed loop communication with the requester has been undertaken. To improve primary care as a viable profession and improve productivity, a collaborative effort between primary care and Health New Zealand – Te Whatu Ora will be required to address the current less-than-ideal method of transfer of care and realise the principles of “Transfer of Care and Test Results Responsibility”.

COMPETING INTERESTS

Nil.

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Appendix

Appendix: Full survey questions.

Numbering		Options
Preface	In the Northern region, secondary care often routinely copy results of both inpatient and outpatient related blood tests, radiology and histology to primary care clinicians. This may either be a manual or automatic process. All these results are accessible on TestSafe in the Northern region when they are reported.	
1.	Are you aware of TestSafe?	Yes or no
	If yes to above, then ask "Do you use TestSafe?"	Yes or no
	If no to above, then ask "Please state reason e.g., no access".	Free type
2.	According to clinical advisors from the Medical Protection Society (Dr. Samantha King) and the Health and Disability Commissioner (Dr. David Maplesden): "There is a responsibility for primary care to act on significant abnormal results when they arrive in your inbox or when you view it on TestSafe, regardless of who ordered the investigation in the first place." Are you aware of the above medico-legal opinion?	Yes or no
	If yes to above, then ask "How long have you been aware of this?"	<3 months >3 months
Preface	The degree of medico-legal responsibility you have is dependent upon the specific clinical situation. For results that involve a potential serious disease or previously unrecorded diagnosis, such as cancer, you would be expected to act in a timely manner (even when you are unaware what the original requesting clinician has planned or has already initiated). For results that are of low clinical importance and where the patient is receiving ongoing care from the requester, it is likely that you would not be criticised for not acting on a result. It is important for you to use your clinical judgement in each instance.	
3.	"Filing patient related results and notifications (e.g., declined outpatient referrals) not initiated by you is therefore, equivalent to acknowledging the result and agreeing to take appropriate action in a timely manner." Are you aware of the above medico-legal opinion?	Yes or no
Preface	Current landscape of primary care. In a 2022 RNZCGP survey: 44% of general practitioners (GPs) stated they intend to retire in the next 5 years, and 64% in the next 10 years 79% of GPs rate themselves as "somewhat burnt out" or "burnt out" 31% of GPs are unlikely to recommend general practice as a career Number of GPs per 100,000 population in NZ is projected to fall from 74 in 2021 to 70 in 2031: In 2022 Australia, there are 119.6 GP FTEs per 100,000 population Number of nurse practitioners (NPs) in NZ is 702, approximately 60% of NPs work in primary care and are able to enrol patients. Funded NP training positions per year to increase from 50 to 100 in 2024	

Appendix (continued): Full survey questions.

Preface (continued)	In the 2021 GP Future Workforce Requirement Report for NZ, GP training needs to increase from 200 to 300 trainees per year to develop a sustainable workforce. Currently this number is expected to only increase to 300 by 2026. Considering all the above factors mentioned (responsibility to act on abnormal results, primary care workforce shortage and burn out), please indicate whether you would like to routinely receive the below inbox items requested by secondary care (both inpatient and outpatient).	
4.	Radiology reports (requested by secondary care).	Yes or no
5.	Histology reports (requested by secondary care).	Yes or no
6.	Endoscopy reports (requested by secondary care).	Yes or no
7.	Cardiology investigations (requested by secondary care) i.e., echocardiogram, exercise tolerance test, angiography etc.	Yes or no
8.	Microbiology reports (requested by secondary care).	Yes or no
9.	Haematology and biochemistry results (requested by secondary care).	Yes or no
10.	Internal hospital referral to outpatient services (e.g., if an inpatient general medicine team requesting outpatient cardiology review is declined and you receive the declined notification in your inbox, there is a potential responsibility for primary care to follow-up if the declined referral is significant/time critical).	Yes or no
11.	Date of future outpatient clinic appointment (requested by secondary and primary care) (note: you can view booked appointment date and time on TestSafe).	Yes or no
12.	Hospital admission notification.	Yes or no
13.	Hospital discharge notification (Note: this is a brief notification and not the full discharge summary that follows).	Yes or no
Do you agree with the following proposed changes to communication between primary and secondary care:		
14.	Any results cc'd to primary care (including the associated responsibilities) need to be discussed with and accepted by a relevant clinician in primary care (e.g. GP, NP or a practice nurse).	Yes or no
15.	Primary care should be able to see drafted copies of outpatient clinic letters on TestSafe (Note: it takes time for the clinic letter to be finalised, given they need to be dictated, transcribed and approved by the clinician).	Yes or no
16.	All Northern region communications (e.g., discharge summaries, clinic letters, radiology reports etc.) should have standardised headings that appear on your practice management system. [specialty] [type of letter] [organisation] e.g., cardiology clinic letter Counties Manukau [imaging modality] [body part imaged] [organisation] e.g., MRI head Counties Manukau	Yes or no
Preface	The National Enrolment Service (NES) is a real-time register of patient enrolment used for capitation-based funding calculations maintained by primary care. Currently, only the enrolled organisation's detail is required. It is not mandatory to include primary care clinician. As secondary care database is not linked to NES, communications to primary care can be sent and addressed to the incorrect primary care practice and clinician.	

Appendix (continued): Full survey questions.

17.	Would you support using NES to identify the correct practice for all hospital communications?	Yes or no
18.	Would you support using NES to identify the responsible primary care clinician for all hospital communications? Note: this will further aid your practice management system to allocate the correct inbox items to the correct clinician	Yes or no
19.	Would you like to have a formalised communication and feedback system between primary and secondary care with regards to any information or interactions of concern? Note: there is currently no register/database on how frequency communication issues arise, hence it is difficult to drive any meaningful change.	Yes or no
Please rank the three options suggested below to manage 'GP to chase/follow' requests in discharge summaries. One being the most preferred and three being the least. You can only choose one, two, or three once in this question.		
20.	Requests to primary care clinician to chase/follow-up results will need to be discussed in person (either directly to GP, NP or practice nurse over the phone).	1, 2 or 3
21.	Electronic communication system between secondary and primary care. Primary care can choose to either accept or decline electronically on their practice management system (i.e., closing the communication loop).	1, 2 or 3
22.	Keep current status quo but utilise a formal feedback system to secondary care regarding any communications of concern.	1, 2 or 3
23.	Should medical schools in NZ include in their curriculum on how to compose discharge summaries? Note: this extends beyond clinical communication skills and includes clinical coding training relevant for secondary care.	Yes or no
24.	Should hospitals in NZ standardise house officer education on how to compose discharge summaries? Note: this extends beyond clinical communication skills and includes clinical coding training relevant for secondary care.	Yes or no
The below questions will form a baseline to compare when we repeat the survey in the future to assess feedback on the proposed change to the Northern region of Health New Zealand – Te Whatu Ora.		
25.	What is the total hours per week (paid + unpaid) do you currently work in any primary care setting? Please include: Both patient-facing the clinical paperwork hours Checking inbox on days off and lunch times if you usually work straight through On-site supervision of medical students/registrars/staff in any primary care setting Regular staff meetings Please exclude: Off-site teaching (e.g. lecturing for the University of Auckland) Continuing medical education (e.g. peer review groups, Goodfellow webinars) Business/practice-related administration/meetings (e.g. payroll and human resource management)	_____ hours
26.	How many of those hours are patient facing?	_____ hours

Appendix (continued): Full survey questions.

27.	Are you a doctor or nurse practitioner?	Doctor or nurse practitioner
28.	What best describes your role at your main work site?	General practice Urgent care Other primary care e.g., age residential care, skin cancer clinic, student health
	If choose “other primary care”, please specify.	Free type
29.	Do you currently have a set number of patients enrolled under your care?	Yes or no
30.	What information do you receive in your electronic inbox from secondary care?	All communication All communication excluding routine screening review by practice nurse e.g. cervical, breast screening Abnormal reports only Other
	If choose “other”, please specify.	Free type
31.	What best describes your current level of training/qualification?	1st year trainee/ registrar 2nd year and above trainee/registrar FRNZCGP/FRNZCUC/ nurse practitioner Other (I do not hold a vocational scope in general practice/ urgent care/NP)
	If choose “other”, please specify.	Free type
32.	How many years have you been working in primary care? Please include your years spent in training.	Under 3 years 3 to 5 years 6 to 10 years Over 10 years
33.	What district is your main work site?	Te Tai Tokerau Waitematā Te Toka Tumai Auckland Counties Manukau Other

Appendix (continued): Full survey questions.

	If choose “other”, please specify.	Free type
34.	Is your practice Very Low Cost Access (VLCA)?	Yes or no
35.	Is your practice Cornerstone accredited?	Yes or no
36.	What is your gender?	Female Male Other
37.	Which ethnic group do you belong to? (you may choose multiple)	Maori Pacific peoples Chinese Indian NZ European/Pakeha Other European Other Non-European
	If choose “other European”, please specify	Free type
	If choose “other Non-European”, please specify	Free type
38.	What is your age cohort?	<35 years 35–44 years 45–54 years 55–64 years 65+
39.	Do you feel you are currently able to maintain a good work-life balance?	Yes or no
40.	Have you decreased your patient facing hours in the past 5 years?	Yes or no
41.	Has increased administrative burden from paperwork been one of the main reasons to reduce patient facing hours?	Yes or no
42.	What are some other reasons you’ve reduced your patient facing hours?	Free type
43.	How would you rate yourself in terms of your wellbeing with regards to burnout?	Not burnt out Somewhat burnt out Burnt out
44.	How would you rate the satisfaction with your role at your main work site?	Very satisfied Moderately satisfied Unsure Moderately dissatisfied Very dissatisfied

Appendix (continued): Full survey questions.

45.	When do you intend to retire or leave primary care (i.e., switch to a different career pathway)?	Less than 3 years 3 to 5 years >5 years
46.	Has increased administrative burden from paperwork been one of the main reasons to move up retirement plans or leave primary care earlier?	Yes or no
	What are some other reasons to move up your retirement plans or leave primary care earlier?	Free type
47.	Would you recommend primary care as a career in New Zealand?	Yes Neutral No

Gender disparity and the impact of COVID-19 on surgical training in New Zealand ophthalmology

Hanna Katovich, Vidit Singh, Eugene Michael, James McKelvie

ABSTRACT

AIM: To evaluate the impact of the COVID-19 pandemic on New Zealand ophthalmology surgical training, focusing on surgical volume, case-mix, trainee involvement and gender disparities.

METHODS: Analysis of logbook data for New Zealand based trainees of the Royal Australian and New Zealand College of Ophthalmologists (RANZCO) from 1 January 2017 to 31 December 2022 was conducted comparing trainee-involved and trainee-performed case volumes between pre-pandemic (2017–2019) and pandemic (2020–2022) years, normalised by full-time equivalents (FTE).

RESULTS: Analysis of 41,370 trainee-involved surgeries revealed that while the total number of trainee-involved procedures remained stable during the pandemic, trainee-performed surgeries decreased significantly by 11.8%. This was driven by a significant gender disparity ($p=0.045$), with a 24.9% decline for female trainees, concentrated among those in urban centres, while male trainee numbers remained stable (+0.74%). Provincial trainees performed twice as many surgeries as urban counterparts. A significant case-mix shift also occurred, with greater glaucoma (+27.6%) and fewer oculoplastic (-20.8%) surgeries.

CONCLUSION: The pandemic was associated with a significant gender disparity in surgical training, driven by a reduction in procedures performed by female trainees predominantly in urban centres. The findings underscore the need to ensure equitable access to surgical training.

The COVID-19 pandemic profoundly disrupted healthcare systems worldwide, including postgraduate medical education and training.^{1,2} In New Zealand strict measures implemented in late March 2020 to control the virus, such as mandatory self-isolation, border closures and lockdowns, led to the cancellation of elective surgeries and the reprioritisation of healthcare resources.^{3,4} The pandemic had a significant impact on surgical training programmes, including ophthalmology, where trainees rely heavily on hands-on experience to develop essential surgical skills.^{5–7}

While previous research has explored the broader effects of the pandemic on surgical education, including the increased use of virtual learning platforms and simulation training, potential gender disparities in the impact on surgical training remain under-explored.⁸ Studies in other surgical specialties have suggested that female trainees may face unique challenges and biases in the allocation of surgical opportunities, potentially exacerbated during times of disruption.^{9,10} In addition, the influence of geographic location on training experiences during such disruptions requires further examination. Differences in

patient demographics, case mix and access to resources between urban and provincial centres may result in varied impacts on surgical training.

This study analyses New Zealand ophthalmology trainee logbook data from 2017 to 2022 to assess the impact of the COVID-19 pandemic on surgical training volume, case mix and trainee involvement, with a focus on identifying any gender disparities and differences between urban and provincial training locations. Understanding these nuanced effects is crucial to ensuring equitable and resilient surgical training programmes in the face of future healthcare disruptions.

Methods

This study received approval from the Auckland Health Research Ethics Committee (AHREC reference: AH24820). The study involved retrospective longitudinal analysis of all de-identified New Zealand based ophthalmology trainee logbook data from 1 January 2017 to 31 December 2022 provided by the Royal Australian and New Zealand College of Ophthalmologists (RANZCO). The dataset contained information on all surgical procedures recorded by trainees including name

of procedure, the trainee's gender and location (urban or provincial) as well as the trainee's role in the procedure (observed, assisted or performed). All logged procedures regardless of whether the trainee observed, assisted in or performed the procedure were defined as "trainee-involved" surgery while cases specifically performed by the trainee were defined as "trainee-performed" cases. Surgical procedures were further categorised for analysis by surgery type into seven categories: anterior segment, cataract, glaucoma, oculoplastic, vitreoretinal, strabismus, and other.

Data were examined for any variations in surgical volume, case complexity and case mix during this time frame, with specific attention given to differences between pre-pandemic (1 January 2017 to 31 December 2019) and pandemic data (1 January 2020 to 31 December 2022). Sub-group analysis was conducted based on gender and geographic location to identify groups that may have experienced a disproportionate impact on their surgical training due to the COVID-19 pandemic. Surgical numbers were normalised for trainee clinical full-time equivalents (FTE) per year. Research and non-clinical FTE were not included in FTE calculations. Annual FTE calculations involved simple multiplication of each trainee's clinical FTE fraction by the proportion of the year spent in that role. For example, a female trainee in a 0.6 FTE role in an urban centre for the first 4 months of the year then moves to a 1.0 FTE role in a provincial centre for the remaining 8 months of the year. This would be accounted for as a total of 0.87 female FTE for the year (consisting of 0.67 provincial FTE [1x8/12] and 0.2 urban FTE [0.6x4/12]). Clinical FTE normalisation was used to

control for differences in total surgical numbers that could be explained purely by differences in group size and number of theatre sessions; thus, more accurately reflecting differences in surgical opportunities for trainees in different groups.

Initially, Levene's test for homogeneity of variance and the Shapiro–Wilk test for normality were performed. Analysis of variance (ANOVA) testing and Cohen's effect size testing, where appropriate, were performed in cases where homogeneity and normality criteria were satisfied. For the ANOVA and related procedures, the primary response variable was the mean number of surgeries per FTE per year, calculated for each of the 6 years of the study period across the relevant subgroups (gender and location). To account for potential non-independence of data across the study period, a linear mixed-effects model with "procedure year" as a random effect was also fitted. *Post hoc* analysis of significant interactions was conducted using estimated marginal means. The results were consistent with the primary linear model, justifying its use.

For analysis of data which deviated from normality (Shapiro–Wilk test, $p=0.01$), a non-parametric bootstrap analysis was employed to ensure robust confidence intervals. The procedure involved resampling the observed data with replacement across 1000 iterations to generate a distribution of the mean difference in surgery volumes between the pre-pandemic and pandemic periods. The 95% confidence intervals were then derived from this distribution using the percentile method.

Statistical analysis was completed using the R statistical software package.¹¹

Table 1: Trainee FTE totals by gender and placement type in pre-pandemic (2017–2019) and pandemic (2020–2022) periods.

	Pre-pandemic (FTE)		Pandemic (FTE)	
	Urban	Provincial	Urban	Provincial
Male	41.83	7.5	41.81	7.58
Female	34.5	7.83	41.98	7.67

Results

During the study period there were 41,370 total trainee-involved surgeries logged and 190.7 trainee FTE-years (216.93 surgeries/FTE/year). The distribution of FTE for male and female trainees in urban and provincial placement types during pre-pandemic and pandemic periods is outlined in Table 1. The data indicates a relatively balanced distribution of trainees, suggesting that differences in FTE are not the primary driver of the observed outcomes.

Levene's test and the Shapiro-Wilk testing confirmed that the annual FTE-adjusted data met the assumptions of homogeneity and normality ($p > 0.05$) when stratified by trainee gender and placement type, allowing for parametric testing. Subsequent two-way ANOVA testing of FTE-adjusted data demonstrated significant main effects for both training location and gender. Over the entire study period, provincial trainees had significantly higher surgical volumes per FTE than urban trainees for both total trainee-involved (+105.4%, $p < 0.001$, Cohen's $d = 3.55$) and trainee-performed surgeries (+94.3%, $p < 0.001$, Cohen's $d = 2.876$). Regarding gender, while there was no significant difference in trainee-involved surgeries per FTE ($p = 0.141$), male trainees performed 17.7% more surgeries than their female counterparts over the entire study period which was statistically significant ($p = 0.022$) with a modest effect size (Cohen's $d = -1.215$). These overview and FTE-adjusted figures are displayed in Table 2.

The impact of the pandemic on surgical volumes

was then examined with a linear mixed-effects model. While the volume of total trainee-involved surgeries remained stable, the number of trainee-performed surgeries per FTE decreased significantly by 10.84% ($p = 0.05$) showing that the pandemic was associated with a significant reduction in trainee-performed ophthalmic surgery in New Zealand. Trainee-involved surgeries per FTE decreased by 11.6% for female trainees and increased by 7.2% for male trainees during the pandemic period, though this difference was not statistically significant ($p = 0.157$). However, trainee-performed surgeries per FTE decreased by 24.94% for female trainees and increased by 0.74% for male trainees during the pandemic and this difference was statistically significant ($p = 0.045$). Pre-pandemic and pandemic period figures are detailed in Table 3.

Further sub-group analysis was performed to ascertain if specific trainee subgroups were disproportionately affected. This demonstrated a statistically significant two-way interaction between gender and placement type ($p = 0.018$) where the only placement-gender subgroup showing a substantial change during the pandemic was urban female trainees, who experienced a reduction of 28.03 performed surgeries/FTE/year, a trend that approached statistical significance ($p = 0.079$). In contrast, the surgical volumes for all other placement-gender subgroups remained stable, with small, non-significant increases observed for urban male trainees (+4.91 surgeries/FTE/year, $p = 0.738$), provincial female trainees (+3.23 surgeries/FTE/year, $p = 0.826$) and provincial

Table 2: Comparison of surgical counts and mean annual FTE-adjusted rates for all trainee-involved and trainee-performed surgeries by gender and placement over the entire study period (2017–2022), with corresponding significance testing and effect-size measures.

	Total surgery counts		FTE-adjusted surgery rates & statistics			
	All involved	Performed	All involved (/FTE/year)	ANOVA p (F) [Cohen's d]	Performed (/FTE/Year)	ANOVA p (F) [Cohen's d]
Male	20,852	14,088	211.2	0.141 (2.757) [0.661]	142.7	0.022* (8.603)
Female	20,518	11,146	223.1		121.2	[-1.215]
Urban	29,840	18,405	157.0	<0.001* (27.176) [3.555]	114.9	<0.001* (19.682) [2.876]
Provincial	11,530	6,829	322.5		223.3	
Total	41,370	25,234	216.9		132.3	

* Statistically significant

Table 3: FTE-adjusted mean annual surgical volumes, with subgroup analysis by placement (all centres, urban, provincial) and gender, comparing pre-pandemic (2017–2019) and pandemic (2020–2022) periods. Percentage change between periods, and results of linear mixed-effects model significance testing are displayed.

		Pre-pandemic (/FTE/year)	Pandemic (/FTE/year)	Change (%)	p-value (F)
All centres	All involved	219.6	214.46	-2.34%	0.894 (0.02)
	Male	235.3	252.2	+7.2%	0.157 (2.757) ¹
	Female	201.1	177.4	-11.78%	
	Performed	139.2	124.1	-10.84%	0.05* (7.71)
	Male	134.7	135.7	+0.74%	0.045* (5.938) ²
	Female	145.1	109	-24.94%	
Urban	All involved	188.1	184.7	-1.80%	0.97 (0.002)
	Performed	122	108.5	-11.10%	0.29 (1.461)
Provincial	All involved	376.2	377.8	+0.41%	0.92 (0.012)
	Performed	237.1	209.4	-11.70%	0.61 (0.304)

* Statistically significant

¹ The p and F values shown are for the interaction between gender and the pandemic period for trainee-involved surgeries.

² The p and F values shown are for the interaction between gender and the pandemic period for trainee-performed surgeries.

Figure 1: Comparison of annual trainee-involved and trainee-performed surgeries per FTE by gender. Trainee-involved and trainee-performed surgeries per FTE remained relatively stable for male trainees but decreased significantly for female trainees during the pandemic period (2020–2022).

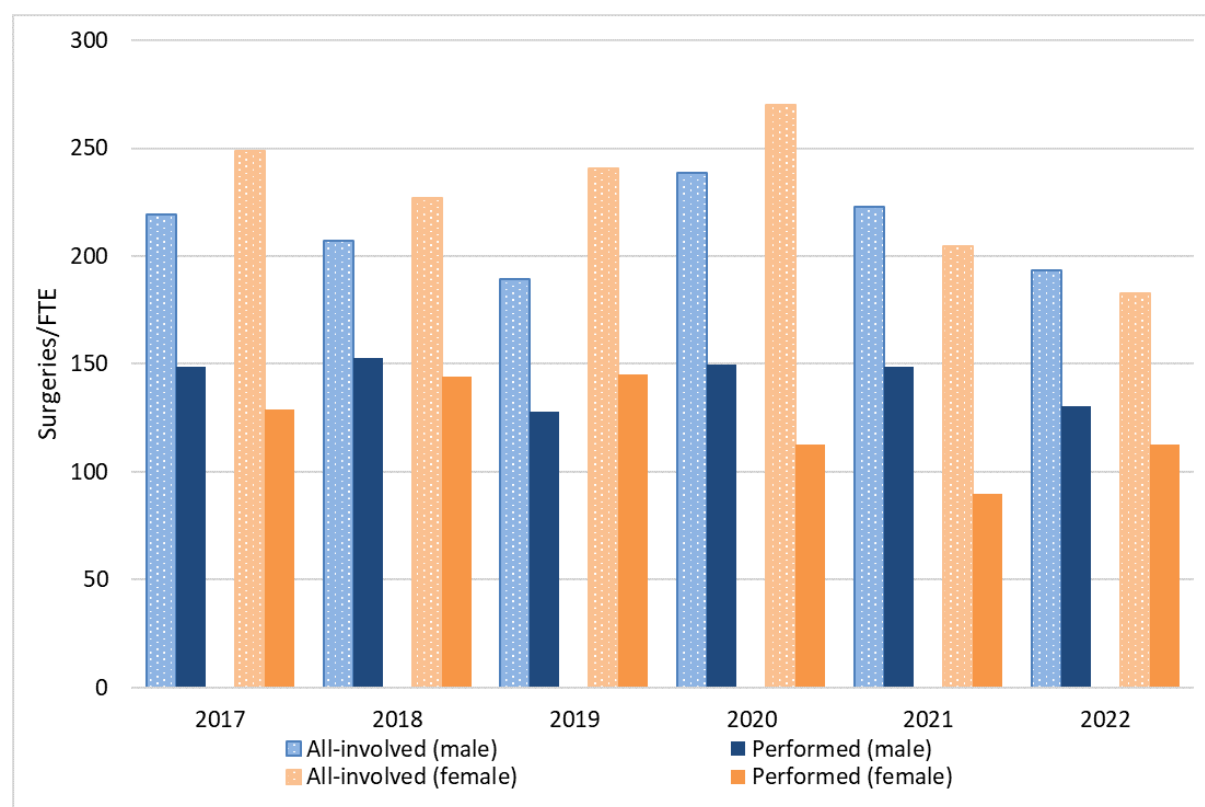


Figure 2: Comparison of subspecialty case mix between urban (left) and provincial (right) centres for all trainee-involved surgeries from 2017–2022. Cataract surgery comprised the majority of surgical procedures, particularly in provincial centres. Oculoplastic and vitreoretinal cases comprised a greater proportion of case mix in urban centres than provincial centres.

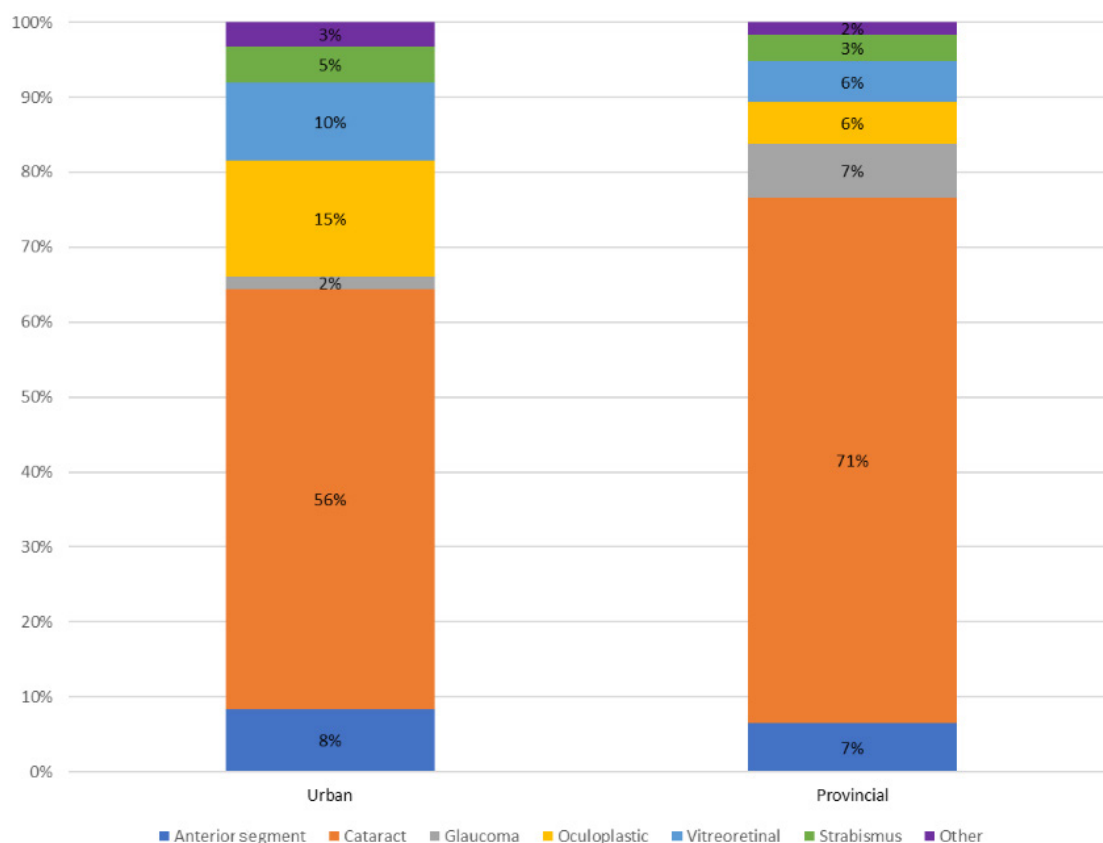


Table 4: Analysis of pre-pandemic (2017–2019) and pandemic (2020–2022) trainee-involved mean annual surgeries per FTE, by subspecialty. Percentage change in mean annual surgeries per FTE between pre-pandemic and pandemic period and bootstrap analysis with 95% confidence intervals are displayed.

	Pre-pandemic (/ FTE/year)	Pandemic avg (/ FTE/year)	Percentage change (%)	Bootstrap analysis (95% CIs)
Anterior segment	16.69	17.74	6.30	(-0.96–3.37)
Cataract	131.29	130.71	-0.45	(-20.6–20.49)
Glaucoma	6.12	7.81	27.64	(0.03–3.67)*
Oculoplastic	31.44	24.90	-20.80	(-9.49–-1.48)*
Strabismus	19.89	20.19	1.53	(-1.04–1.27)
Vitreoretinal	9.56	9.64	0.94	(-0.08–0.24)
Other	5.52	6.69	21.30	(-3.37–6.21)

* Statistically significant

male trainees (+7.73 surgeries/FTE/year, $p=0.600$). These trends are evident in the annual FTE-adjusted surgical volumes illustrated in Figure 1.

Additional analysis of the subspecialty case mix revealed that cataract surgery was the most common trainee-involved surgery (59.7%), followed by oculoplastic (12.8%), vitreoretinal (9.2%) and anterior segment (7.9%) surgeries. As shown in Figure 2, cataract surgery is more prominent in provincial trainee-involved caseloads while other surgeries (particularly oculoplastic and vitreoretinal surgeries) comprise a greater proportion of urban trainee-involved caseloads.

Further analysis of trainee-involved surgeries by subspecialty during the pre-pandemic and pandemic periods was conducted. Levene's test confirmed homogeneity of variance for all subspecialties ($p>0.05$); however, the Shapiro–Wilk test revealed significant deviations from normality ($p=0.01$). As a result, non-parametric bootstrap analysis was employed, with statistical significance defined as a 95% confidence interval (CI) that did not include zero.¹² The results are outlined in Table 4 below. Of note, a 27.6% rise in trainee-involved glaucoma surgeries/FTE/year in the pandemic period compared to the pre-pandemic period was noted and was statistically significant (95% CI: 0.03–3.67). Concurrently, a 20.8% reduction in trainee-involved oculoplastic surgery was noted and was also statistically significant (95% CI: -9.49–1.48). No statistically significant differences between mean number of trainee-involved surgeries/FTE/year between pre-pandemic and pandemic periods were noted for other subspecialties. Data for cataract surgery, the largest subspecialty in the dataset, were further analysed, specifically to investigate for changes in the number of trainee-performed cataract surgeries/FTE/year during the pandemic. Although the mean number of trainee-performed cataract surgeries/FTE/year was 14.0% lower during the pandemic (83.7 surgeries/FTE/year) compared to pre-pandemic (97.3 surgeries/FTE/year), this difference was not statistically significant by bootstrap analysis (95% CI: -24.1–0.84).

Discussion

The COVID-19 pandemic has had a lasting effect on healthcare and will continue to influence medical practice.^{8,13} It has also changed modern ophthalmic training and education. The missed learning opportunities resulting from cancelled surgeries prompted various educational

advancements, including a significant increase in virtual resources such as Surgical Education and Training (SET) modules, virtual case discussions via video conferencing, and live-streamed surgeries.¹⁴ Our study examined the volume and types of surgical cases trainees were exposed to and their level of involvement in cases in both provincial and urban centres in New Zealand and analysed for changes between the pre-pandemic and pandemic periods.

The analysis of surgical logbook data demonstrated that the number of total trainee-involved surgeries normalised for FTEs did not significantly differ between pre-pandemic and pandemic years. However, analysis of trainee-performed surgeries showed a statistically significant 10.84% reduction in surgeries actually performed by all trainees during the pandemic, highlighting a clear impact on direct trainee involvement in surgical procedures. This trend suggests that although trainees are still exposed to a similar number of cases as they were before COVID-19, a greater proportion of this exposure was in the role of observer or assistant rather than actively performing surgery.

Potential reasons for this include increasing service provision demands after extended theatre shutdowns, healthcare funding constraints and increasing outsourcing of cases deemed suitable for trainees to perform resulting in a greater proportion of cases being performed by consultant ophthalmologists.

Interestingly, our detailed analysis revealed this effect was highly specific, being almost exclusively felt by female trainees in urban centres. This subgroup was the only one to experience a notable reduction in performed surgeries (-28.03 surgeries/FTE/year), a trend that approached statistical significance, while their male counterparts in urban centres and all trainees in provincial settings were relatively unaffected. This finding suggests that access to theatre sessions may be similar between groups, but that female trainees in urban centres in particular spend comparatively more cases observing or assisting. Reasons for this may include institutional factors, implicit bias, behavioural differences and gender normative stereotypes which have previously been reported elsewhere.⁹ While self-reported logbook data may introduce reporting bias between genders (e.g. potential bias introduced by male trainees being more likely to record their role as primary surgeon than female trainees for cases in which they had similar levels of involvement), this is unlikely to fully explain the significant decrease observed,

as any systemic gender-based differences in reporting would have been present prior to the pandemic and would not account for the specific decline in cases affecting urban female trainees during the pandemic period.

When examining differences between urban and provincial placements, provincial trainees logged significantly more surgeries, both total and performed, compared to their urban counterparts when normalised for FTE. This difference may be attributed to factors such as lower patient volume and fewer specialists in provincial settings, leading to greater opportunities for trainees to gain hands-on experience. Conversely, urban trainees may have faced more competition for surgical opportunities due to higher patient volumes, presence of senior fellows and a greater concentration of specialists, which could explain the differences in surgical exposure. These findings underscore the influence of placement type on the amount and quality of surgical training opportunities available to ophthalmology trainees and suggest that a period of provincial placement is likely beneficial for trainee surgical experience. This highlights that while a provincial placement is beneficial for acquiring surgical volume for all trainees, other factors within the urban training environment appear to be the primary drivers of the observed gender disparity.

Although the number of trainee-involved surgeries remained relatively stable, a significant shift in case mix was noted with a significant reduction in oculoplastic surgeries and a significant increase in glaucoma surgeries. It is unclear why this occurred but may be due to factors such as preferential substitution of oculoplastic surgeries for other surgical procedures on trainee lists such as cataracts and glaucoma surgery. Also, oculoplastic surgeries are more likely to be elective and require general anaesthesia, making them more susceptible to cancellation during periods of resource limitation compared to more urgent glaucoma surgery. The rise in glaucoma surgery may also be in part due to the rising popularity of minimally invasive glaucoma surgery (MIGS) or due to delayed diagnosis and treatment of glaucoma during the pandemic which necessitated greater rates of surgical intervention. Additionally, in a small workforce, changes in subspecialist consultant staff at particular training centres can dramatically alter the case mix available to trainees.

The impact of COVID-19 and the changes in surgical activity were not unique to RANZCO

training during the pandemic. Multiple retrospective studies conducted in various countries have highlighted the significant disruption caused by the COVID-19 pandemic on clinical activities, impacting not only ophthalmology but also other surgical specialties. The availability of operative theatre opportunities was notably reduced as a result of multiple waves of cancellations of elective cases in various surgical fields.^{15–17} However, despite these challenges, results of the current study suggest that ophthalmology services in New Zealand adapted reasonably well during this time.

It is important to note the limitations of this study. Potential variations in data logging practices between trainees could introduce inconsistencies in data interpretation. However, the recordings are likely to be generally accurate. Guidelines are available to trainees to ensure consistency, and trainees are motivated to capture every case to meet training requirements and demonstrate their comprehensive experience. Other limitations include the analysis of data on an annual rather than a monthly basis, which may not fully capture the nuances of changes over the COVID-19 period. Furthermore, the study cannot isolate the effects of COVID-19 from other effects such as healthcare budget changes, the impact of a growing population or the increased outsourcing of trainee-appropriate cases to the private sector. Additionally, our aggregated data did not allow us to track individual trainees through the training program. As the analysis was conducted on de-identified and aggregated FTE data provided by RANZCO, the exact number of unique trainees, overlap of trainees between the two periods, or variability in surgical volume between individual trainees could not be determined. A model accounting for repeated measures on individual participants would be more robust, though our mixed-effects model accounting for procedure year did not show a significant random effect.

Due to significant deviations from normality in the subspecialty data, identified by the Shapiro–Wilk test, a non-parametric bootstrap analysis with 1000 resamples was utilised to generate robust confidence intervals. This method was preferred over parametric tests such as ANOVA, which assume data normality, and the Mann–Whitney U test, which is less suitable for small sample sizes and does not provide confidence intervals to quantify the magnitude of any change. The bootstrap approach, which involves resampling the observed data, provided a more reliable and interpretable assessment of the changes in sur-

gery volumes, thereby strengthening the validity of these findings despite the data's limitations.¹²

In conclusion, this study identified that the COVID-19 pandemic was associated with the emergence of a significant gender disparity in surgical training in New Zealand, driven specifically by a reduction in surgical procedures performed by female trainees in urban centres. Our findings also confirm the substantial influence of geography

on training, with provincial placements offering a much higher volume of surgical experience. Furthermore, the pandemic induced a tangible shift in case mix, with an increase in glaucoma and a decrease in oculoplastic surgeries. These results underscore the urgent need for training programs to develop strategies that ensure equitable and resilient surgical training pathways, particularly within urban environments.

COMPETING INTERESTS

Nil.

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New Zealand Heart Failure Workforce Survey 2023

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ABSTRACT

AIM: The aims of this study are to describe the current status of the heart failure nursing workforce in Aotearoa New Zealand, identify key challenges and provide recommendations.

METHOD: In March 2023, a survey coordinated by the Cardiac Society of Australia and New Zealand and the New Zealand Regional Heart Failure Working Group was distributed to all district health boards in Aotearoa New Zealand. The survey collected data on heart failure nursing resources, including full-time equivalent (FTE) per population, clinical versus non-clinical time, scope of practice, nurse-led services, and performance measures.

results: A total of 23 hospital responded, yielding a 100% response rate and revealing varied resource allocation across district health boards. While FTE rates have generally increased, nearly half of the boards reported less than one FTE per 100,000 population, with only three reaching the recommended two FTE per 100,000 as endorsed by the British Society for Heart Failure.

CONCLUSION: This foundational survey highlights the current status of the heart failure nursing workforce in Aotearoa New Zealand. It suggests that increasing the number of specialised nursing staff, particularly nurse practitioners (NP), to meet international standards would improve access to timely, effective and equitable treatment for all heart failure patients. Increasing NP FTE across hospital and community settings is likely to enhance healthcare and social outcomes, especially in under-served regions. Further research focussing on ethnicity, geographic distribution and workforce participation is recommended to guide targeted workforce development.

Heart disease remains one of the leading causes of death across many parts of the world, including Aotearoa New Zealand. Heart failure (HF), the end result of heart disease, affects 1–3% of the Aotearoa New Zealand population and remains a major public health problem, with high rates of hospitalisation and mortality.^{1,2} HF is a clinical syndrome that spans a spectrum of ejection fraction (EF) and is broadly classified into three EF phenotypes.

HFrEF is regarded as the most severe of the three phenotypes and is prioritised for treatment due to robust evidence and the availability of effective medical interventions that yield positive clinical outcomes.^{3–6} Furthermore, substantial evidence supports the use of specific medications that can enhance EF in this patient population.⁷

Patients with HFmrEF are classified as having an intermediate form of HF. The main objective in managing this population is to prevent any further decrease in EF. Diligent monitoring and prompt interventions are vital for preserving their current cardiac function and preventing a progression to HFrEF.⁷

HFpEF represents the most common type, especially among older adults and those with comorbidities like obesity, diabetes or chronic

kidney disease. Options for pharmacological treatment are limited, leading to reliance on diuretic therapies that necessitate strict fluid management and routine monitoring. Patients with HFpEF often experience hospitalisations due to decompensated HF.^{7–10}

Over the past 40 years there have been significant advances in the diagnosis and management of HF, particularly HFrEF, with the introduction of complex imaging and pharmacological and device-based interventions that have improved both morbidity and mortality.^{5,11–13} In Aotearoa New Zealand the demographics and incidence of HF are important factors influencing healthcare delivery and outcomes, especially in specific populations such as Māori and Pacific peoples, where recent studies have shown a widening incidence in health inequities over the last 13 years.^{14,15}

Research indicates that a multidisciplinary team approach, incorporating cardiologists and HF nurses, significantly reduces recurrent hospitalisations and enhances patient survival rates. Multidisciplinary teams centred around HF nurses are classified as a Level 1-A recommendation based on findings from randomised controlled trials and in alignment with international guidelines.^{7,16}

The British Society for Heart Failure recommends a minimum of two full-time equivalent (FTE) per 100,000 population.¹⁷ Furthermore, they report programmes that include HF nurses, particularly nurse practitioners (NP), are financially advantageous. For example, in the United Kingdom (UK), implementing such programmes could yield an estimated net economic benefit of £20,000 annually if implemented across 60 sites, and assigning one community HF nurse per 100,000 people, managing a caseload of 60 patients, could result in annual savings of £42,000, or £169,000 per 1,000 patients.¹⁷

The HF nursing workforce in Aotearoa New Zealand comprises NP, nurse specialists (NS) and registered nurses (RN), each differing in qualifications and experience. In addition, unpublished surveys on HF, conducted in 2011 and 2015 in Aotearoa New Zealand, revealed significant variation in this workforce across the country. NP, representing the highest clinical nursing level, independently assess, diagnose and prescribe treatments, thus driving clinical decision making. NS operate under standard operating procedures, and under supervision from NP or doctors.¹⁸ In Aotearoa New Zealand, an informal career progression pathway exists to support NS to advance their careers and qualify as NP. However, the existing systems do not allow for a seamless transition. To improve this, the career pathway should be aligned with the needs of the service using a systems-thinking approach. This would help standardise career progression and ensure robust workforce and succession planning across Aotearoa New Zealand.

Method

In March 2023, a survey was distributed to each district health board (DHB) across Aotearoa New Zealand, facilitated by the Cardiac Society of Australia and New Zealand and the New Zealand Regional Heart Failure Working Group. One team member from each of the 20 DHBs was asked to complete the survey. For DHBs without a dedicated HF team, respondents were asked to estimate the nursing FTE working in HF at their DHB.

The electronic survey, which consisted of tick-box questions for quick completion (approximately 15 minutes), was returned via email. Survey responses were then entered into an Excel spreadsheet and analysed using RStudio. The study questions addressed areas such as: nursing FTE dedicated to HF per 100,000 population, scope

of practice, balance of clinical versus non-clinical time, clinical oversight (medical/nursing), nurse-led service components and delivery and performance/quality measures. The survey also asked if nurse-led clinics accepted all phenotypes, or HFREF only (see Appendix for the full survey questions). The nursing FTE in HF was presented as the median and range, as well as FTE per 100,000 population.

The Aotearoa New Zealand DHB subpopulation data were obtained from Stats NZ.¹¹ Data from 2013 were used to estimate the 2011 populations, and data from 2022 were used to estimate the current 2023 survey population.

Statistical analysis was performed using RStudio. Results are presented as FTE and as numbers per 100,000 population.

Results

Responses were received from all 23 hospitals across the 20 DHBs, achieving a 100% response rate. The total number of FTE positions for HF nursing in Aotearoa New Zealand increased from 23.3 FTE in 2011 (range: 0–4.0 FTE) to 38.65 FTE in 2023 (range: 0.4–6.0 FTE). Over the same period, Aotearoa New Zealand's population grew from 4,241,000 in 2011 to 5,124,100 in 2023, which led to a modest rise in FTE per 100,000 population from 0.52/100,000 in 2011 to 0.75/100,000 in 2023, representing a relative increase of 44% (see Table 1).

The results highlighted variation in resource allocation across DHBs in Aotearoa New Zealand. Despite the overall increase in FTE nearly half of all DHBs had an HF nursing FTE rate of <1 FTE per 100,000 population, with only three DHBs reaching the recommended HF nursing FTE rate of ≥ 2 FTE per 100,000 population. These DHBs represent just 5% of Aotearoa New Zealand's total population, indicating a disparity in resource allocation across the country (see Figure 1).

The total HF nursing FTE across Aotearoa New Zealand was 38.65, and of these less than a quarter were NP (see Table 2).

Proportion of clinical versus non-clinical time

The survey asked respondents to indicate the proportion of clinical versus non-clinical time for their service. Non-clinical time encompasses various meanings and can be categorised into three primary areas: patient-related activities (which are not face-to-face), specialty advancement (such as developing specialty guidelines

Table 1: Heart failure nursing full-time equivalent (FTE) for Aotearoa New Zealand.

	2011*	2023	% increase 2011 to 2023
FTE	23.3	38.65	66%
Aotearoa New Zealand population	4,241,000	5,124,100	15%
FTE/100,000 population	0.52	0.75	44%

*Population used for 2011 data was from 2013.

Figure 1: Heart failure nursing full-time equivalent by the 23 responding hospitals (data 2023).

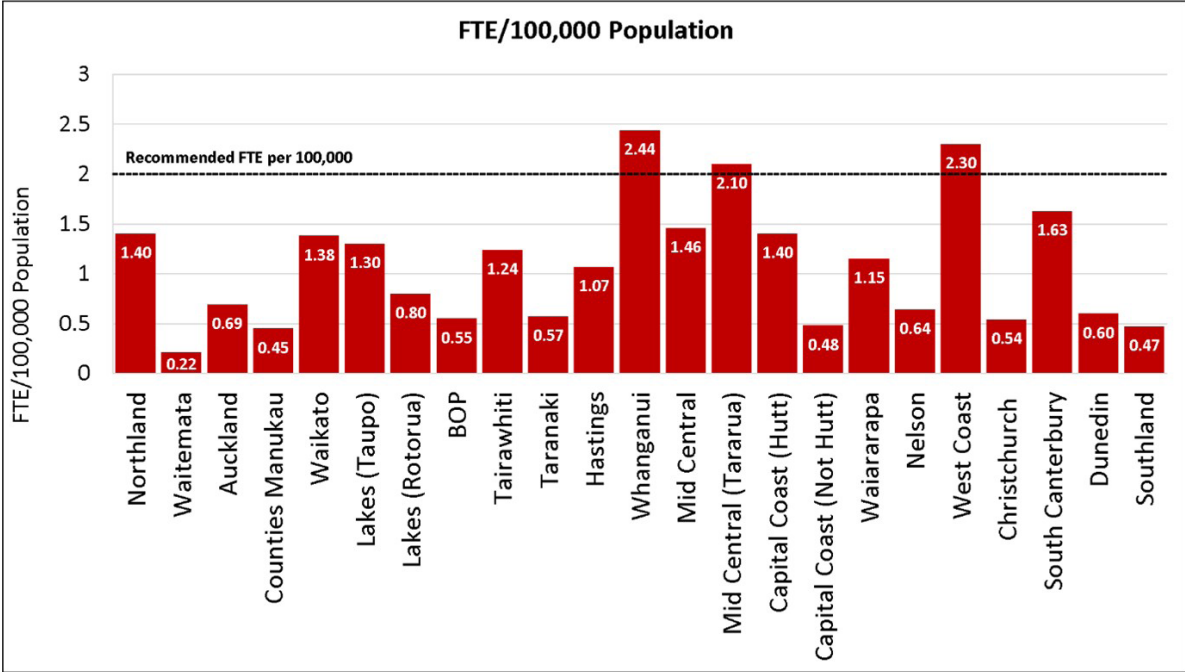


Table 2: Total heart failure nursing FTE across Aotearoa New Zealand

FTE summary (23 hospitals)	
NP	9
NS	29.25
RN	0.4
Total FTE	38.65

FTE = full-time equivalent; NP = nurse practitioner; NS = nurse specialist; RN = registered nurse.

and staying updated on relevant research) and professional development. This excludes educational activities, conferences and study days. The results indicated the majority of HF nurses had non-clinical time built into their clinical roles, with the proportion of time split 80–90% clinical and dedicated 10–20% non-clinical. For a full-time HF nurse (40 hours per week) the proportion of non-clinical hours were estimated to be between 4 and 8 hrs per week.

NP/senior medical officer (SMO) support

Of the 23 hospitals surveyed, three were managed by NP alone. While only six hospitals enjoyed specific SMO access and a dedicated HF team, the majority of hospitals reported good access to SMO and/or NP.

Referral-related data

The survey revealed variability in the HF

nursing services provided across Aotearoa New Zealand. Most hospitals had written referral criteria and accepted patients across all EF phenotypes; however, three hospitals only accepted patients with HFrEF. More than half of the DHBs surveyed offered an inpatient nurse-led HF service. Additionally, all hospitals conducted follow-up care in the community, including outpatient clinics, home visits and rural area outreach clinics. Only five DHBs reported providing some form of exercise programme (see Table 3).

The survey report for nurse-led HF outpatient clinics covered three aspects: wait time to first nurse-led appointment (FSA), the length and subsequent wait to follow-up. The wait time to FSA varied across hospitals. Nearly half of patients were seen in a timely fashion, i.e., 2 weeks or fewer; however, more than half of all the hospitals reported a wait time of 3 weeks or longer, with the majority waiting more than 3

Table 3: Types of heart failure service provided across Aotearoa New Zealand.

Types of services	N (%)
Outpatient clinics	21 (91%)
Community outreach	16 (70%)
Home visits	14 (61%)
Inpatient consults	16 (70%)
Community groups	2 (8.7%)
Social media	1 (4.3%)
Exercise classes	5 (22%)

Table 4: Wait times for heart failure patients prior to the first nurse-led appointment outpatient clinic

*Wait times	N (%)
1 week	1 (4.3%)
2 weeks	8 (35%)
3 weeks	6 (26%)
>3 weeks	8 (35%)

*Wait time refers to new heart failure patients, from referral (primary or inpatient) to first nurse-led appointment.

weeks (see Table 4).

The length of clinics also varied across hospitals, with FSA visits taking between 30 to 60 minutes compared with follow-up clinics at 20 to 60 minutes (see Table 5).

Time to follow-up

Time to follow-up after the initial FSA also varied. Although the goal for HFrEF patients to be reviewed is “better, faster, stronger”, within as short a time frame as possible, i.e., weekly/fortnightly, only a third of hospitals were able to achieve a fortnightly review.^{5,12,13} Further, over half of all hospitals surveyed reported 4-weekly reviewing of patients, with two hospitals reporting wait times exceeding 4 weeks.

Guideline-directed medical therapy (GDMT)

The standard time to optimise GDMT for HF treatment varied across Aotearoa New Zealand. Recent evidence supports optimisation of GDMT to be achieved within a month.^{5,7,19} However, the majority of patients in Aotearoa New Zealand are waiting longer than 6 months to have their GDMT optimised, therefore requiring at least an

additional 3 months on optimal therapy before re-imaging can take place. This can delay crucial investigation and timely advanced therapies (see Table 6).

For patients requiring repeat cardiac imaging following GDMT optimisation, access to imaging services was variable. Less than a quarter of the hospitals surveyed reported always having timely access to imaging, with the majority reporting difficulty, and over a quarter reporting a significant problem (see Table 7).

Audit and data collection

To ensure HF treatment in Aotearoa New Zealand is equitable, accountable and evidence-based, standardised data collection, regular auditing and ongoing review of DHBs are essential. Although over half of the hospitals surveyed reported conducting audits of their services, less than half have conducted an audit within the last 3 years. More importantly, only two DHBs across Aotearoa New Zealand reported participation using the data collection of the National Heart Failure registry with others reporting local data collection, which is not linked to the national registry.

Table 5: Duration of clinic visit.

Clinic type	Duration of clinic					
	20 mins	30mins	35 mins	40mins	45 mins	60 mins
New patient (FSA)		3 (13%)		1 (4.3%)	5 (22%)	14 (61%)
Follow-up (FU)	1 (4.3%)	14 (61%)	1 (4.3%)	1 (4.3%)	5 (22%)	1 (4.3%)

FSA = first nurse-led appointment; FU= follow-up.

Table 6: Time to optimise GDMT.

Time to optimise GDMT in patients with HFrEF	N (%)
2 months	1 (4.3%)
3 months	5 (22%)
4 months	6 (26%)
6 months	10 (43%)
>6 months	1 (4.3%)

GDMT = guideline-directed medical therapy.

Table 7: Repeat imaging post-GDMT titration.

Repeat imaging post-GDMT titration	N (%)
Always	5 (22%)
Often	6 (26%)
Sometimes	6 (26%)
Rarely	6 (26%)

GDMT = guideline-directed medical therapy.

Discussion

Opening summary

This foundational study provides a national overview of the HF nursing workforce in Aotearoa New Zealand and reveals considerable regional variation in staffing and service delivery. Despite an overall increase in the total number of HF nursing FTE positions from 2011 to 2023, nearly half of the DHBs still report a rate of less than one FTE per 100,000 population, with only three DHBs meeting the minimum of two FTE per 100,000 population as recommended by the British Society for Heart Failure.¹⁷

Key findings underscore the urgent need for targeted policy interventions, enhanced workforce planning and a stronger commitment to reducing health disparities. Findings also highlight challenges in the timely optimisation of GDMT and access to repeat cardiac imaging, both of which disproportionately affect patients from Māori, Pacific and rural populations, exacerbating existing health inequities.^{14,20,21}

Interpretation of findings

This survey highlights significant disparities in HF nursing services across Aotearoa New Zealand, reflecting systemic weaknesses within the current health framework.

While HF nursing FTE has increased since 2011, nearly half of the DHBs still report less than one FTE per 100,000 population, well below the recommended two FTE. Even where targets are met, geographic isolation limits access. These disparities point to broader issues of inequitable workforce distribution and underdeveloped service delivery structures.

The current health framework causes variability in service delivery and restricts NP from fully

utilising their advanced clinical training. Examples include clinic availability, wait times, implementation of GDMT, repeat imaging and inconsistent national data collection.

Reforming the health framework to support independent NP practice, alongside standardised care pathways and national coordination, could reduce variability and improve access. A multi-disciplinary approach, supported by international evidence, demonstrates that NP-led care improves outcomes and reduces hospital admissions, yielding both clinical and economic benefits.^{4,7,17} Such measures are critical to evaluating the country's performance to meet international benchmarks and to addressing the prevalent health inequities in HF management.²²

Addressing regional inequities, increasing NP FTE and supporting professional development within a structured framework are critical steps toward sustainable, high-quality HF care across Aotearoa New Zealand.^{20,21}

Comparison with previous literature

This study highlights the persistent regional disparities in the availability of specialised HF nursing staff. Internationally, studies have shown that disparities in HF care are often exacerbated by inequitable resource allocation, resulting in poorer outcomes for marginalised populations. This study reinforces those findings, demonstrating that while the overall HF nursing workforce has increased, inequities in staffing levels persist, particularly in regions where the population is less likely to access timely care. The evidence is consistent with research from the UK, which suggests that increasing nurse-led services, particularly those involving NPs, can reduce disparities.¹⁷

Strengths and limitations

A key strength of this study is its national scope

and high response rate, with data collected from all 23 hospitals across the 20 DHBs in Aotearoa New Zealand. This comprehensive participation provides a robust and representative overview of the current state of the HF nursing workforce. The study also offers valuable longitudinal insights by comparing current findings with data from 2011, highlighting trends in workforce growth and distribution over time. Importantly, the survey extended beyond workforce numbers to examine service delivery models, clinical roles, access to multidisciplinary support and the timeliness of care, yielding a detailed picture of the operational landscape of HF nursing. The inclusion of NP roles and the differentiation of scope of practice across nurse classifications further enhances the relevance of findings to workforce planning and policy development.

However, this study also has several limitations. The data are self-reported and rely on individual respondents' knowledge and interpretation of their local services, which may introduce inconsistencies, particularly in DHBs without formal HF teams. The absence of qualitative data limits contextual understanding of the barriers faced by HF nurses and patients, which may be critical to addressing service variation and inequities. Additionally, the lack of ethnicity-stratified data constrains the ability to assess the extent to which HF services are meeting the needs of Māori and Pacific peoples, populations disproportionately affected by HF. Finally, the limited engagement with the National Heart Failure Registry among most DHBs reduces the capacity for national benchmarking and coordinated quality improvement, underscoring the need for more integrated-data systems.

Implications for practice and policy

This study reveals significant variation in the allocation and utilisation of the HF nursing workforce across Aotearoa New Zealand, underscoring the urgent need for more consistent and equitable workforce planning at a national level. Despite an increase in total FTE positions since 2011, nearly half of all DHBs still fall below the recommended minimum of two HF nurse FTE per 100,000 population, with only three DHBs meeting or exceeding two FTE per 100,000. These disparities contribute to delays in patient care, prolonged optimisation of GDMT and limited access to advanced clinical oversight and imaging services. Policymakers and health system leaders should prioritise the development of a national HF nursing workforce strategy,

with clear benchmarks for FTE per population, a focus on increasing the NP FTE and dedicated funding for under-served regions.

At a practice level, expanding the scope and accessibility of nurse-led HF services could alleviate pressures on secondary care, reduce hospital readmissions and improve patient outcomes, particularly when services extend into the community through outreach and home-based care. The integration of structured clinical pathways and performance audits into HF nursing practice can also enhance accountability and ensure alignment with international best practice guidelines. Finally, consistent participation in the National Heart Failure Registry should be mandated across all DHBs to enable real-time monitoring of service delivery and outcomes. A more standardised, data-driven and equity-focussed approach to HF nursing services will be essential to improving both the quality and consistency of care nationwide.

Implications for future research

The findings of this study highlight several key areas where future research is warranted to support the development of a more equitable and effective HF care model in Aotearoa New Zealand. First, there is a need for qualitative research to explore the lived experiences of HF nurses and patients, particularly in under-resourced regions. Such insights could help identify systemic barriers to service delivery, workforce retention and timely access to care, while informing strategies to strengthen multidisciplinary collaboration and community-based models.

Further research should also focus on evaluating the impact of different HF nursing models on patient outcomes, including hospital readmission rates, medication optimisation timelines and health-related quality of life. Comparative studies between DHBs with varying nurse-to-population ratios and service structures could provide valuable evidence to support workforce investment and redesign. Additionally, research that specifically investigates equity outcomes, particularly among Māori and Pacific peoples, will be essential to addressing persistent disparities in HF management and outcomes. Integrating ethnicity-stratified service utilisation data and embedding equity-focussed metrics into national audits and registries will be critical to this effort. Finally, there is scope for economic evaluation studies to quantify the cost effectiveness of increasing NP FTE and community-based HF services to guide

policy and funding decisions at both regional and national levels.

Conclusion

This study delivers the first comprehensive, nationwide assessment of Aotearoa New Zealand's HF nursing workforce, exposing systemic challenges in staffing, service delivery and equity. While workforce numbers have grown modestly, persistent regional disparities continue to undermine timely access to care and contribute to variable patient outcomes. These issues are symptoms of deeper structural fragmentation that cannot be resolved through isolated initiatives.

Addressing these complex challenges demands a proactive, systems-thinking approach, recognising the interconnectedness of service delivery, workforce planning, digital infrastructure and community needs. Strategic investment must be paired with interdisciplinary collaboration—spanning nursing, medicine, Māori health providers, data analysts and policy experts—to co-design equitable and sustainable models of care.

Strengthening the role of HF nurses, especially NP, and embedding consistent national standards will be critical levers in transforming service

delivery and ensuring high-quality, accessible care for all New Zealanders living with HF.

Recommendations

1. Standardise service delivery models through the implementation of national guidelines.
2. Improve access to GDMT and imaging.
3. Strengthen data infrastructure and audit participation by mandating regular participation in the National Heart Failure Registry for all DHBs.
4. Address health equity and regional disparities by providing targeted support to under-resourced DHBs.
5. Expand community-based services led by nurses to improve care access.
6. Establish a national benchmark for HF nursing FTE, setting a minimum standard of ≥ 2 HF nursing FTE per 100,000 population, flexible enough to accommodate regional variability.
7. Expand and support the HF NP workforce, particularly in under-served areas.
8. Invest in workforce sustainability and development to build a sustainable and skilled HF nursing workforce.

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Appendix

Nurse Led-Heart Failure Management in New Zealand An Audit of Nurse Specialist/Nurse Practitioner Practice

Section A: Nurse Profile & Place of Work

1. Profile and Place of Work

Total nursing FTE for Heart Failure	
DHB and Geographic location	
Population of region served	

2. Does your Heart Failure Service have a Clinical Lead? Tick (✓) appropriate Clinical Lead. If Other, please indicate where, in the box provided.

SMO	
NP	
Other	

3. Which components does your Heart Failure Service provide? Tick (✓) appropriate Component

Standard hospital-based outpatient clinics	
Outreach clinics (e.g. community/regional)	
Home visits	
In-patients with heart failure	
Community Heart Failure support groups	
Face group Heart Failure support group	
Targeted support for young heart failure patients	
Exercise Classes	

4. Does your service have referral criteria? Tick (✓)

Yes	
No	

5. Does your Service only see patients with HFrEF? Tick (✓)

Yes	
No	

6. Indicating numerically, in the box provided (e.g. 50% Secondary; 50% Primary/Community), where are the majority of your referrals from? If Other, please indicate where, in the box provided.

Secondary (medical, surgical, OPH, cardiology and clinic)	
Primary/Community (GP's)	
Other	

Section B: Models of Care for HF service

1. Nurse Specialist led Heart Failure Clinics - Tick (✓)

Does your Service have an SMO with dedicated FTE for support?	
Yes	
No	
If no dedicated SMO FTE is available for Heart Failure Service, do you have easy access to SMO support associated with your clinics? - Tick (✓)	
Yes	
No	

Do your Nurse Specialists have support from a Nurse Practitioner?	
☐	Yes
☐	No
Does your Service have Nurse Practitioner led Clinics?	
☐	Yes
☐	No
Do you have a Scheduler to book your patients into clinic?	
☐	Yes
☐	No
Please indicate time allocated for out-patient clinic visits, in the box provided.	
	New Patients
	Follow up

2. Approximately how many weeks post discharge is your first clinic visit? Tick (✓) appropriate week

☐	1 week
☐	2 weeks
☐	3 weeks
☐	>3 weeks

3. Does your Service do a routine 48 hour call post discharge? Tick (✓)

☐	Yes
☐	No

4. Do you routinely monitor K+ levels one week post initiation of MRA's? Tick (✓)

☐	Yes
☐	No

5. How often do you have timely access to repeat imaging post-titration (≤ 3 mnths)? Tick (✓). If Other, please indicate in the box provided.

☐	Never
☐	Rarely
☐	Sometimes
☐	Often
☐	Always
☐	Other

6. What is the proportion of dedicated clinical time per week and non-clinical time (i.e. Professional Development) in your service? Tick (✓) appropriate percentage

☐	100% clinically
☐	90% clinically and 10% non-clinically
☐	80% clinically and 20% non-clinically
☐	60% clinically and 40% non-clinically

7. Do you audit your Heart Failure Service? Tick (✓)

☐	Yes
☐	No
<i>If Yes, Have you audited your Service in the past 3 years? - Tick (✓)</i>	
☐	Yes
☐	No

Section C: Professional role**1. Do you have Clinical/Peer support in your organisation? Tick (✓)**

☐	Yes
☐	No

2. Using the list below, what is the highest qualification each team member holds? If Other, please mention qualification and how many, in the box provided.

RN/Bachelor of nursing degree	
Post-graduate certificate	
Post-graduate diploma	
Clinical Master of Nursing	
Nurse Practitioner with prescribing	
Nurse Practitioner without prescribing	
Other	

3. Are there members in your team currently studying? Tick (✓)

☐	Yes
☐	No
<i>If Yes, indicate numerically how many, in the box provided, (e.g.: 1, 2, 3).</i>	
	Team members studying

Section D: Scope of practice**1. At present, what nursing positions describes your Heart Failure Service? Please indicate numerically the FTE. If Other, please mention nursing position and FTE, in the box provided.**

Nurse Practitioner	FTE	
Nurse Specialist with prescribing		
Nurse Specialist working towards prescribing		
Nurse Specialist		
Speciality Nurse		
Other		

2. Do you have Standard Operational Procedures (SOP's) for nurse initiated medication adjustment/titration? Tick (✓)

☐	Yes
☐	No

3. Do you require a Medical Practitioner/Nurse Practitioner for all medication changes? Tick (✓)

☐	Yes
☐	No

In-depth information on Nurse Specialist Led Heart Failure Clinics

1. Referrals to Clinics. Tick (✓)

Do you know the number of referrals per year?	
☐	Yes
☐	No
What is your usual caseload (number of active patients)? Numerical value required.	

2. HFrEF: For standard medication titration. Tick (✓)

For patients with HFrEF how frequently would you see these patients?	
☐	Weekly
☐	Fortnightly (2 weeks)
☐	Monthly
☐	>1 month

3. For a new referral, what is your waiting time for clinic review? Tick (✓)

☐	None
☐	1 week
☐	Fortnightly (2 weeks)
☐	1 month
☐	>1 month

4. What is your standard time to optimise medical therapy? Tick (✓)

☐	2 months
☐	3 months
☐	4 months
☐	6 months
☐	>6 months

Introducing the Hauora Māori Equity Toolkit for Specialist Healthcare Services (HMET-SHS)

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ABSTRACT

The Hauora Māori Equity Toolkit for Specialist Healthcare Services (HMET-SHS) is an innovative tool designed to support equitable service delivery within specialist healthcare services. A multidisciplinary team reviewed the health system structure and developed the HMET-SHS in the form of a Periodic Service Review (PSR) for measuring and monitoring Hauora Māori outcomes in specialist health services. The HMET-SHS promises to reshape specialist healthcare services and champion equitable healthcare improvements for all New Zealanders.

This viewpoint article introduces the rationale and design of the Hauora Māori Equity Toolkit for Specialist Healthcare Services (HMET-SHS), a systematic tool designed to address health inequities within specialist healthcare services. The HMET-SHS is a framework for service evaluation, providing specific, achievable and measurable goals to guide comprehensive service-wide transformation in addressing health inequities.

Health systems in Aotearoa New Zealand struggle to grapple with a colonial history that has led to health inequities between Māori and non-Māori. In the current health system, non-Māori enjoy health privilege, including greater access to best-practice healthcare and effective healthcare interventions, along with better outcomes despite a lower disease burden.^{1,2} Despite strategic changes and efforts to improve healthcare access and quality for Māori communities, the aspirational wording of these high-level strategies have not translated into meaningful improvements for health equity in Aotearoa New Zealand.^{1,3,4}

Addressing racism within health systems is critical for achieving health equity. Quality assurance must actively identify and address racism, challenge mono-cultural frameworks and embed culturally responsive interventions.^{3,4,5,6} Effective interventions involve tackling systemic and organisational barriers to healthcare access, such as incomplete patient registration, access and scheduling issues, along with prohibitive service costs, which disproportionately affect Māori.⁷

In 2020, an implementation plan for Aotearoa New Zealand's Health Strategy was introduced, entitled *Whakamaui: Māori Health Action Plan 2020–2025*.⁸ *Whakamaui* identified a range of actions to be taken to achieve strategic gains for Māori health, including an intention that the health system delivers equitable outcomes for Māori, addressing racism in the health sector and supporting Māori communities to exercise self-determination to improve their health and wellbeing.

The HMET-SHS empowers communities of practice to monitor the Crown's efforts in addressing persistent health inequities. It is designed to uphold rangatiratanga (self-determination) of Māori, to exercise their rights under Te Tiriti o Waitangi and the United Nations *Declaration on the Rights of Indigenous Peoples*. Central to its purpose is ensuring the attainment of the highest possible standard of physical and mental health for Māori.⁹

Rationale for the HMET-SHS

Implementation tools, including equity evaluation toolkits, have been developed to assess potential impacts of policies on Māori and reduce inequities.¹⁰ However, the application of these tools has been largely limited to regional or national policies; progress in enacting these plans at local levels has been slow. The goal of the HMET-SHS is to embed Hauora Māori approaches in order to drive systemic changes and, ultimately,

achieve equitable outcomes for service users. It is only through systemic changes that systemic inequities can be addressed.¹¹

The HMET-SHS offers a practical framework for health services to implement and review recommendations aimed at improving Māori health outcomes. It emphasises incorporating Māori perspectives and adopting a strategic approach to embed structural mechanisms of change within health systems.

Integrating health equity research evidence into the HMET-SHS

The initial development phase of the HMET-SHS involved an in-depth review of existing literature and health equity frameworks to identify key markers of health inequity across the health sector. This process also highlighted recommendations for improving service provision. The review uncovered numerous factors contributing to health inequities, particularly within the domains of quality and safety, spanning both administrative and clinical pathways.

Building on these findings, the HMET-SHS incorporates specific, evidence-based tasks designed to address known barriers to equitable health outcomes within services, as identified by existing health research.^{12,13}

The *Whakamaua* action plan emphasises the importance of routinely monitoring quality and safety improvement initiatives to reduce variation in health services that contribute to inequities.⁹ Similarly, key reviews on equity for Māori within the health system have highlighted the use of locally adapted equity tools, co-designed and implemented in partnership with Māori, to address issues within the quality and safety domain.^{3,14} These tools are particularly effective when they actively engage participants in developing action plans, fostering motivation for change and ensuring consistent application across services.¹⁵ The HMET-SHS draws on insights from three key barriers to equity, which are summarised below.

Access to appointments

Māori patients experience significantly higher rates of non-attendance at health appointments,¹⁶ which are linked to poorer health outcomes. Poor communication between health services and patients has been identified as a major contributing factor, particularly for Māori. To address this, implementing culturally aligned communication,

clear booking confirmation and follow-up protocols for missed appointments are essential.¹² Additionally, ensuring timely access to Māori health workers and community services play a crucial role in improving equitable access.

Racism and discrimination

Negative experiences, such as cultural alienation, are a key driver of higher non-attendance rates among whānau Māori.^{13,14} Discrimination with the health system is strongly linked to poorer health outcomes for Māori and reflects institutional racism that continues to hinder health equity.^{13,17} Achieving equity requires an anti-racist and decolonial approach, with health services collectively taking responsibility for supporting Māori communities.^{17–19} This includes rejecting narratives that impart blame upon Māori or label them as non-compliant.

Workforce

Barriers to consistent, high-quality healthcare for Māori remain a persistent issue across health systems.²⁰ A significant challenge lies in workforce development: both the under-representation of Māori in the health workforce and insufficient investment in cultural competency and safety training for existing staff. Building and sustaining a strong Māori health workforce is a critical enabler of improved health outcomes. This includes deliberate recruitment of staff with Hauora Māori expertise and prioritising professional development to foster cultural safety.²¹ This allows integration of such supportive practices to become “business as usual” within teams.

Development of the HMET-SHS

The HMET-SHS was co-developed by Māori and non-Māori experts with extensive clinical, research and medical education experience in Hauora Māori. It aligns with key Māori health initiatives like *Whakamaua*,⁸ the Meihana Model²² and the Hui Process.²³ The Meihana Model explicitly incorporates the ongoing impacts of colonisation and systemic racism as critical determinants of health outcomes. Similarly, HMET-SHS supports health services in creating culturally competent and responsive systems, promoting collective responsibility for addressing systemic health disparities and advancing the broader goal of health equity in Aotearoa New Zealand.

The Periodic Service Review format

The HMET-SHS operates as a Periodic Service Review (PSR), a structured approach to service improvement, that involves setting standards, implementing interventions and regularly monitoring progress towards those standards.²⁴ Drawing on evidence of key drivers of behavioural change, PSRs focus on establishing specific, actionable goals and encourage self-monitoring. This process begins with establishing baseline measurements of agreed reference points, followed by the implementation of interventions and monitoring to assess progress over time. Unlike audits, which review markers and goals retrospectively, PSRs track and evaluate change over time, using tools from behavioural analysis and organisational behaviour management to drive meaningful, lasting change. In the context of the HMET-SHS, this involves understanding the drivers of behaviour change within healthcare settings and designing interventions to promote more equitable practices.

Equity tools that utilise a PSR framework are well-suited to empower health services to drive change, measure outcomes and proactively address the known drivers of health inequities. This rationale led to the decision to adopt a PSR framework for the HMET-SHS, offering a theoretically grounded, ecological and comprehensive approach to systematically transforming health systems.

Tasks and structure of HMET-SHS

The full HMET-SHS is presented in Table 1. The HMET-SHS contains 29 equity-focussed tasks spread across four domains:

Domain 1: Service Manager

Domain 2: Senior Medical Officer

Domain 3: Clinician

Domain 4: Administrator

The HMET-SHS enables regular monitoring of progress towards actionable goals in each domain, integrating continuous feedback and fostering shared responsibility. The specific tasks within the HMET-SHS were designed to address known barriers to equitable health outcomes, drawing on both existing health research and the clinical experience of the Hauora Māori health professionals in the HMET-SHS team.

The tool promotes shared responsibility across the healthcare team, empowering members to

set realistic, actionable goals and implement a service-wide monitoring system. By distributing tasks across domains, the HMET-SHS encourages collective responsibility and engages the entire service team in achieving common objectives, focussing on overall service performance rather than individual team contributions.²⁴

Domain-specific accountabilities

The HMET-SHS assigns specific tasks across four domains: administration staff, service managers, clinicians and senior medical officers (SMOs). These accountabilities engage all members of the healthcare team, ensuring each role contributes to the shared goal of improving service-wide health outcomes.

Domain 1: Service Manager

The Service Manager domain involves the largest set of tasks, focussing on embedding responsive systems and protocols. Service Managers are responsible for implementing anti-racism strategies to counter institutional and interpersonal racism. This includes ensuring culturally safe and competent booking and communication protocols, and maintaining consistent referral protocols.

A critical responsibility for Service Managers is to ensure effective data collection and management systems, enabling the review and monitoring of equitable health outcomes. This includes confirming the patient databases are accurate and in accordance with the Ministry of Health protocols, to monitor Māori patients and track progress towards health equity.²⁵ Inadequate IT systems can hinder the accurate collection of ethnicity data, making it impossible to monitor health inequities effectively. Therefore, ensuring correct gathering and analysis of ethnicity data is a priority for health services.²⁶ Service Managers are also tasked with ensuring the physical environment is inclusive of Hauora Māori, facilitating professional development for team members in Hauora Māori and promoting awareness of protocols to manage discriminatory behaviour.

Domain 2: Senior Medical Officer (SMO)

In the HMET-SHS framework, SMOs play a crucial role in identifying conditions significant to Māori patients through data analysis and in implementing evaluation and quality improvement programmes. They are responsible for establishing best practice pathways for patient care and

Table 1: The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

		Score/status 1 = Achieved 0.5 = Progress 0 = Opportunity Initial review: Date:	Score/status 1 = Achieved 0.5 = Progress 0 = Opportunity Final review: Date:	Actions taken or planned & dates	Alignment with Whakamaua: Māori Health Action Plan 2020–2025 (Objective → Priority Area). Meihana Model
1	Service Manager Domain				
1.1	Databases include NZ Māori ethnicity as a field.				Whakamaua: 3.6, 3.7, 4.7 Meihana: Marginalisation
1.2	Staff routinely collect and confirm patient ethnicity and iwi data per Ministry of Health protocols.				Whakamaua: 3.6, 3.7, 4.7 Meihana: Marginalisation, Whānau, Whakatere
1.3	Service manager has identified data points to support monitoring equity for Māori.				Whakamaua: 3.6, 3.7, 4.7 Meihana: Marginalisation, Whakatere
1.4	Manager outlined monitoring of data points (1.3) within the department.				Whakamaua: 3.6, 3.7, 4.7 Meihana: Whakatere
1.5	DNA data is regularly reviewed by ethnicity, with strategies in place to reduce Māori DNA.				Whakamaua: 2.6, 2.7, 3.5, 3.6, 3.7 Meihana: Ngā Hau e Whā

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

1.6	Ensure all administrative contact with Māori patients aligns with the Hauora Māori Equity Toolkit (HMET-SHS) outpatient protocols, including phone calls, enabling text reminders and incorporating te reo Māori when appropriate.				Whakamaua: 2.5, 2.6 Meihana: Āhua, Whakatere, Colonisation, Racism
1.7	Ensure that all Māori patients who DNA receive appropriate follow up as per the HMET-SHS protocol.				Whakamaua: 2.5, 2.6 Meihana: Hui Process, Colonisation, Racism
1.8	Ensure a clear referral process to Māori health worker and community services are in place.				Whakamaua: 2.5, 2.6 Meihana: Ratonga Hauora
1.9	The HMET-SHS Māori patient details protocol is in place.				Whakamaua: 2.5, 2.6 Meihana: Marginalisation
1.10	The department actively identifies current Maori staff and their iwi as a baseline to track against when developing Māori workforce.				Whakamaua: 1.3, 2.2, 2.3, 2.8, 4.2 Meihana: Whānau, Whenua, Whakawhanaungatanga

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

1.11	The department prioritises the employment of Māori or individuals who have Māori cultural competencies.				Whakamaua: 1.3, 2.2, 2.3, 2.8, 4.2 Meihana: Whakatere
1.12	A Hauora Māori professional development plan (PDP) is in place for all members of the department with paid time allocated to complete training.				Whakamaua: 2.6 Meihana: Whakatere
1.13	The department's physical environment is inclusive of Hauora Māori signposts.				Whakamaua: 1.6, 2.6 Meihana: Taiao, Āhua, Tikanga
1.14	Hauora Māori audit reporting includes patient experience survey and tracking of protocols.				Whakamaua: 3.7, 3.8, 4.7, 4.8 Meihana: Whakatere, Marginalisation, Taiao
1.15	The department has a monitoring system in place to map inpatient and outpatient Māori health and community referrals.				Whakamaua: 3.7, 4.7 Meihana: Whakatere, Marginalisation, Ratonga Hauora

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

1.16	Service managers and staff are aware of discrimination procedures and policies.				Whakamaua: 2.6 Meihana: Racism
	Total	/ 16	/ 16		
		Score/status 1 = Achieved 0.5 = Progress 0 = Opportunity Initial review: Date:	Score/status 1 = Achieved 0.5 = Progress 0 = Opportunity Final review: Date:	Actions taken or planned & dates	Alignment with Whakamaua: (Objective → Priority Area) and the Meihana Model.
2	Senior Medical Officer (SMO) Domain				
2.1	The department has identified best practice pathways, including timeframes, that are signposts for appropriate patient care.				Whakamaua: 2.6, 3.5, 3.6, 3.7, 3.8 Meihana: Whakatere
2.2	A clear reporting system such as a dashboard is in place to monitor departmental outcomes for Māori patients based on 2.1.				Whakamaua: 2.6, 3.5, 3.6, 3.7, 3.8 Meihana: Whakatere
2.3	A quality improvement programme is in place to respond to health inequities as identified in 2.2.				Whakamaua: 2.6, 3.5, 3.6, 3.7, 3.8 Meihana: Whakatere

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

2.4	Each staff member is enrolled in Hauora Māori PDP.				Whakamaua: 3.5, 3.6, 3.8 Hui Process & Meihana Model
	Total	/4	/4		
3	Clinician Domain (All clinical staff that are not SMOs)	Score/status 1 = Achieved 0.5 = Progressing 0 = Opportunity Initial review: Date:	Score/status 1 = Achieved 0.5 = Progressing 0 = Opportunity Final review: Date:	Actions taken or planned & dates	Alignment with <i>Whakamaua: Māori Health Action Plan 2020–2025</i> (Objective → Priority Area) and the Meihana Model.
3.1	Each staff member is enrolled in Hauora Māori PDP.				Whakamaua: 3.5, 3.6, 3.8 Hui Process & Meihana Model
3.2	The department actively refers all Māori inpatients to the Hauora Māori support team or equivalent service.				Whakamaua: 1.6, 2.6, 3.6, 4.1 Ratonga Hauora, Whakatere
3.3	The department has a clear referral pathway to Māori health providers in the community for clinicians to access and utilise.				Whakamaua: 1.6, 2.6, 3.6 Ratonga Hauora, Whakatere

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

3.4	The department has a clear system in place to ensure outpatient appointments are confirmed with Māori inpatients before they leave the hospital.				Whakamaua: 1.6 Meihana: Whakatere, Ratonga Hauora
	Total	/4	/4		
		Score/status 1 = Achieved 0.5 = Progressing 0 = Opportunity	Score/status 1 = Achieved 0.5 = Progressing 0 = Opportunity	Actions taken or planned & dates	Alignment with Whakamaua: Māori Health Action Plan 2020–2025 (Objective → Priority Area) and the Meihana Model.
4	Administrator Domain				
4.1	Each staff member is enrolled in Hauora Māori PDP.				Whakamaua: 2.5, 2.6 Meihana: Hui Process and Meihana Model
4.2	The HMET-SHS administration outpatient appointment protocols are implemented and followed as per 1.6.				Whakamaua: 2.5, 2.6 Meihana: Colonisation
4.3	The HMET-SHS administration DNA protocol is implemented and followed as per 1.7.				Whakamaua: 2.5, 2.6 Meihana: Whakawhanaungatanga, Colonisation, Racism, Ratonga Hauora

Table 1 (continued): The Hauora Māori Equity Toolkit for Specialist Health Services (HMET-SHS).

4.4	Staff are aware of and implement the referral processes to Māori health worker and community services as per 1.8.				Whakamaua: 2.5, 2.6 Meihana: Ratonga Hauora
4.5	The Māori patient details protocol is followed.				Whakamaua: 2.5, 2.6 Meihana: Mihimihi, Whakawhanaungatanga, Whānau
	Total	/5	/5		
	Overall Total	/29	/29		

DNA = did not attend; HMET-SHS = Hauora Māori Equity Toolkit for Specialist Health Services; PDP = professional development plan; SMO = senior medical officer.

for ensuring these pathways are culturally competent, safe and responsive. SMOs are also tasked with ensuring quality improvement initiatives are in place to address health inequities identified through these pathways. They must implement clear reporting systems to monitor outcomes for Māori patients based on these pathways.

Domain 3: Clinician domain (non-SMO clinical staff)

Clinicians share responsibility for the consistent implementation of HMET-SHS tasks within their departments. They are tasked with ensuring there are clear referral pathways to Hauora Māori providers in the community, and have access to a dedicated Health Pathways page that provides details of Hauora Māori services, including Māori social services that address the social determinants of health.

Clinicians must confirm outpatient appointments before patient discharge, ensuring that appointment times are convenient and accessible for Māori patients. It is crucial to regularly record and monitor referral and appointment data to track progress and ensure consistency across services.

Domain 4: Administrator

Healthcare administrators, often the first

point of contact for patients, play a critical but under-researched role in the healthcare system.²⁷ Within the HMET-SHS framework, administrators are responsible for developing cultural safety and competency skills, particularly focussing on the correct pronunciation of Māori names and fostering respectful, patient-led te reo Māori communication.

Administrators also implement booking and confirmation protocols aligned with Kaupapa Māori clinical models, which support effective communication and access for Māori patients. These protocols are based on work conducted on the West Coast (oral communication between author MP and Kylie Parkin, Ngāpuhi/Ngāti Whātua/Te Roroa, Interim General Manager Hauora Māori, West Coast District Health Board, February 2021), and aim to reduce barriers to appointment access, including addressing issues like transportation.

Administrators must also facilitate professional development opportunities to support culturally safe communication with Māori patients, challenge discriminatory narratives and ensure that Māori patients are not subjected to explicit and implicit racism. Administrators play an essential role in recognising and combating victim-blaming stereotypes and narratives that overlook the impact of social determinants of health and

colonisation.²⁸

Shared tasks: professional development

To facilitate the integration of Hauora Māori principles across all aspects of healthcare service provision, the HMET-SHS requires every staff member within a service to be enrolled in the service's Hauora Māori professional development programme. To provide culturally safe and competent care, healthcare services must address racism in the workplace, as well as intersecting forms of discrimination. HMET-SHS emphasises the need for reform to deliver clinically and culturally appropriate care in order to reduce health inequities. Achieving this requires leadership to take concrete actions in addressing both structural and interpersonal racism. The HMET-SHS revealed a need for increased Hauora Māori knowledge and skills within the workforce. The subsequent implementation of a dedicated professional development package saw considerable uptake and engagement, suggesting a positive shift towards a more culturally responsive and equitable service.

Monitoring progress and embedding accountability

The success of the HMET-SHS depends on regular monitoring of progress towards health equity. To implement the HMET-SHS effectively, services create systems of interlocking accountability, with oversight from high-level management and multiple people. While it is important to clearly designate who is ultimately accountable for implementing specific tasks, the process should be collaborative, fostering collective responsibility across the team.

We recommend that monitoring and oversight be carried out by a Clinical Director, Service Manager, Administrative Manager and Quality Assurance Officer, each reporting on their respective domains. For example, Administrative Managers are well placed to oversee the implementation of booking and communication protocols, while Service Managers can track staff participation in professional development programmes.

Data monitoring should occur at regular intervals throughout the year, ideally in a quarterly cycle. These reviews should involve SMOs analysing data to track progress in addressing inequities in clinical pathways, as well as scoring the HMET-SHS across all domains to assess that standards are being maintained and improved.

The HMET-SHS uses a scoring system with a maximum of 29 points (equivalent to 100%) spread across the four domains. This distribution of tasks ensures that Hauora Māori equity principles are integrated into every aspect of the healthcare service and promotes shared responsibility across the entire team. Departmental presentations of such data in a supportive environment with all members of the team present provides visible motivation to support these changes.

To enhance monitoring and accountability, the HMET-SHS development team recommends creating a visual dashboard to track outcomes for Māori patients throughout the implementation period.²⁹ Dashboards provide services with constant access to relevant data, improving adherence to quality guidelines and ultimately leading to better patient outcomes. Research shows that using multiple forms of feedback such as visual aids, along with explicit targets and action plans,³⁰ fosters positive behaviour change and motivates teams to consistently implement interventions.

Conclusions: charting a course forward

Potential next steps are the mandatory adoption of health equity assessment tools across the healthcare sector. Additionally, there is a need to design interoperable IT systems with Māori data experts to support real-time equity monitoring, enhance compliance with national health strategy and address systemic failures to uphold Te Tiriti o Waitangi. Grounded in Hauora Māori principles and informed by research in health equity and organisational improvement, the HMET-SHS offers a powerful framework for driving tangible, sustainable improvements in healthcare outcomes for Māori.

The HMET-SHS is a robust tool with broad applicability. Early pilots in Waitaha/Canterbury have demonstrated its potential to identify and address health inequities, improving specialist healthcare delivery for Māori communities. Given the ongoing and widespread nature of health inequities across the national health system, expanding the HMET-SHS framework to a broader healthcare context is essential. This should include specialist health and hospital services, where the pervasive issue of non-Māori privilege in healthcare access and outcomes, particularly in mental health, remains a critical barrier to achieving equity.^{1,20,31–33}

COMPETING INTERESTS

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MK: Previous employment by the Canterbury District Health Board, which became part of Health New Zealand – Te Whatu Ora (current employer). MK was previously an honorary senior clinical lecturer at the University of Otago's Māori/Indigenous Health Innovation (MIHI).

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Reappraisal of the hype and hope offered by psilocybin treatment of depression

Ben Beaglehole, Jenni Manuel

ABSTRACT

AIM: To provide a balanced account of psilocybin treatment of depression for expectations to be appropriately set.

METHOD: Review and discussion of key psilocybin efficacy studies. Reporting of side effects and risk of harm with psychedelic treatments. Comparisons and contrasts with ketamine studies of treatment-resistant depression (TRD).

RESULT: Early psilocybin studies offer promise but expectation bias and functional unblinding are factors in the treatment response. Psilocybin is generally well tolerated but side effects are often not systematically reported, and some recipients may experience harm. The ketamine research has similar methodological considerations, but the weight of positive evidence is stronger for a treatment-resistant group.

CONCLUSION: The evidence for psilocybin treatment of depression is insufficient to press for wider availability and use.

The recent announcement by Associate Health Minister David Seymour that Medsafe has approved the prescription of psilocybin by a highly experienced psychiatrist for patients with treatment-resistant depression (TRD) has placed psychedelic treatments in the spotlight.¹ A flurry of related media activity suggests that there is an appetite for this form of treatment alongside the need for more effective antidepressants. We are concerned that the use of psychedelic treatments (of which psilocybin is one) is not yet matched by their evidence base and write this article to offer a message of caution.

Psychedelic substances temporarily induce altered states of consciousness. Typical experiences include hallucinations and distortions of mood, time and thought. Some psychedelics (peyote, psilocybin, ayahuasca) are present in the natural environment and are known to Indigenous peoples. Others were created in laboratories as medical models of psychosis and to explore other benefits. The psychedelics all have agonist or partial agonist effects at brain serotonin 5-HT_{2A} receptors.²

The first phase of research into the therapeutic benefits of psychedelics began in the 1940s.² LSD was used to potentiate psychotherapy by allowing repressed material to be more easily passed into consciousness.² It was also used in patients with schizophrenia to generate insights into psychosis and in the treatment of alcoholism and addiction.² However, these avenues of research ended

abruptly in the late 1960s due to the widespread uptake of LSD for recreational purposes and subsequent backlash leading to the so-called war on drugs.

There has been renewed research into the therapeutic benefits of psychedelics for the past decade, but randomised controlled trials (RCTs) have only been reported more recently. The first two RCTs evaluating psilocybin for major depressive disorder (MDD) were published in 2021.^{3,4} Davis et al. reported large mood improvements with psilocybin compared to a wait list control group 5 and 8 weeks after dosing.³ However, Carhart-Harris et al. did not report significant antidepressant benefits from psilocybin compared to escitalopram, although secondary outcome measures assessing mood and functioning favoured psilocybin.⁴ A follow-up study comparing outcomes at 6 months reported sustained improvements for psilocybin and escitalopram, but differences between groups for the primary outcome were non-significant.⁵

A recent systematic review of the efficacy of psilocybin for depression identified nine RCTs evaluating 602 participants. It concluded that psilocybin demonstrated significant depression reduction compared to controls, but this was to a moderate degree.⁶ The control treatments were: being placed on a wait list, a low dose of psilocybin and escitalopram, placebo, niacin, and a low dose of psilocybin alone. The review suggested that interpretation of benefits

associated with psilocybin should factor in the risk of bias due to blinding concerns, the lack of formal evaluation of adverse events, financial conflicts and lack of consideration of mechanisms of action.

A key issue in psilocybin research is the issue of expectation and blinding.⁷ Given the hype with psilocybin, participants are likely to enter studies with hope and beliefs that psilocybin will be beneficial. The psychedelic experience associated with psilocybin is typically 4 to 6 hours duration. For participants allocated psilocybin, the belief in improvement will be preserved by the presence of the psychedelic experience whereas the opposite is likely for those that are allocated to the wait list or receive a control treatment without any psychedelic effects.

Clinical trials are often criticised for their participants not being representative of the wider patient pool. This is the nature of efficacy trials that seek to define tight inclusion and exclusion criteria to increase validity. For Carhart-Harris et al. approximately 1000 patients were screened for 59 patients to be enrolled,⁴ and for Davis et al. 870 individuals were screened and 27 were enrolled to enter the study.³

To date, adverse events in psychedelic trials are not uniformly monitored and reported. A systematic review and meta-analysis of adverse events reported that psychedelics were generally well tolerated with serious adverse events occurring in four percent of participants with preexisting psychiatric conditions.⁸ However, fewer than a quarter of studies systematically assessed adverse events.⁸ We also note the intensive nature of psychedelic-assisted psychotherapy may increase the risk of boundary violations. This is mitigated by the presence of two therapists, but sexual misconduct was reported and acknowledged in an MDMA (commonly known as ecstasy) study of post-traumatic stress disorder (PTSD).⁹ In population samples, there are also reports of persisting hallucinations and flashbacks to earlier trips following psychedelic experiences.¹⁰ This suggests that harm may occur following psychedelic experiences for some vulnerable individuals.

Regulators have taken note of developments in this area. The United States Food and Drug Administration (FDA) granted psilocybin “breakthrough” status for its potential benefits for TRD in 2018 and MDD in 2019. MDMA was granted breakthrough status for PTSD in 2017. Following these announcements, the Therapeutic Goods Administration (TGA) of Australia approved the

clinical use of psilocybin for TRD and MDMA for PTSD in 2023. This occurred despite misgivings from experts in the field and concerns that approval was provided ahead of evidence for efficacy.¹¹ More recently, the FDA declined to approve MDMA-assisted psychotherapy for clinical use due to concerns about functional unblinding and bias in clinical trials.¹²

Psilocybin treatment is resource intensive. Typically, two therapists are provided for participants. Following hours of preparatory sessions, one or two dosing sessions are provided weeks apart, and then post-treatment integration meetings take place. The therapists attend to “set” and “setting”. Set refers to the person’s internal mindset and emotional state, and setting is the physical and social environment in which the experience takes place. Participants are advised to surrender to the experience and to have trust in the process. The preparation is intended to reduce the risk of the person having a “bad trip” but sets expectations that the experience will be beneficial. This framing is thought to influence longer term outcomes.¹³ The intensive nature of treatment and amount of staff input means it is unlikely that public mental health providers will offer psilocybin treatment (particularly when the evidence base is questioned). When offered privately, the costs are substantial and likely to be outside of the reach of many with MDD.

We are involved in research using ketamine for the treatment of TRD. Ketamine is classified as a dissociative anaesthetic but has some psychedelic effects. Ketamine has also been promoted widely in non-research settings, but it is interesting to compare the scientific literature for ketamine with psilocybin. The body of ketamine related research is oriented towards those with TRD as opposed to MDD (a much more difficult group to help). Despite this, the evidence base supporting the benefits of ketamine as a short-term treatment of depression is substantial. A 2023 Lancet systematic review identified 49 RCTs evaluating ketamine for depression (n=3299 participants) with moderate to large effect size improvements with ketamine compared to the control depending on dose and formulation.¹⁴

Many of the methodological challenges with psilocybin treatment are also present for ketamine. For example, the dissociative effects are marked with parenteral dosing. This means preservation of blinding is difficult. However, we see more opportunities with ketamine to provide treatment in publicly funded mental health services.¹⁵

For example, oral dosing of ketamine offers a low-intensity option that minimises the dissociative experience. This raises the possibility of community dosing and addresses equity and access concerns that are present with psilocybin treatment.

To date, many of the ketamine studies are short-term with high relapse rates following dosing ending. If ketamine is to become an established treatment, further research is required to address areas of concern including the role of longer ketamine courses, its safety profile with extended treatment, and the role of adjunctive psychotherapy. We have also previously expressed caution about ketamine as a solution to the psychosocial drivers of depression.¹⁶

In conclusion, we are concerned that recent announcements and desire for new antidepressant

treatments is outpacing the evidence and fuels expectation bias. The literature supporting psilocybin treatment is early, and methodological challenges suggest non-specific factors play a large role in its benefits. Although MDD is burdensome, psilocybin treatment does not present a scalable intervention that can address its impacts. In private settings, care is required to ensure individuals are well-informed before embarking on costly treatments with uncertain evidence for efficacy. Perhaps repeated low-dose studies or studies with lower intensity psychotherapeutic components will provide a pathway forwards. For the foreseeable future, we expect that psilocybin treatment of MDD will be a niche treatment in New Zealand. Until then, a cautionary note is required about the excitement offered by psilocybin treatment of MDD.

COMPETING INTERESTS

Associate Professor Beaglehole and Dr Jenni Manuel research the benefits of ketamine for mood and anxiety disorders.

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Strengthening health leadership to tackle health system challenges: reflections from our experience

Ashley Bloomfield, Sisira Jayathissa, Stephen Dee, Criselda Sayoc

ABSTRACT

AIM: We aimed to describe the experience of strengthening leadership at a hospital to improve patient outcomes and staff satisfaction and wellbeing.

METHOD: Following a review of the Hutt Hospital Emergency Department, several actions were taken to strengthen the capacity, culture and leadership of the department. In addition, an organisation-wide values and culture exercise was undertaken. Senior clinical and non-clinical leaders were provided with interprofessional leadership training to foster shared understanding, strengthen relationships and promote practical application of learned skills.

RESULTS: Subsequent external reviews of the emergency department documented a significant change in its culture and functioning; these changes have endured, and it is now a preferred place to train and work.

Wider organisational leadership training was an essential part of creating a culture that valued staff and their wellbeing, and delivering better outcomes for patients. Involving local health system leaders, e.g., from primary care, provided significant additional value.

CONCLUSIONS: Healthcare organisations and the health system are complex and present a myriad of leadership challenges. Healthcare leaders need and deserve specific training and strong support to lead effectively. A focus on this is essential if New Zealand is to successfully address health system challenges, both old and emerging.

New Zealand's health system challenges persist despite substantial structural changes and, more recently, leadership changes. The underlying challenges that led, at least in part, to these leadership changes have not diminished. This is not surprising, for these challenges are neither new nor unique to New Zealand. The Gibbs report of 1988, *Unshackling the Hospitals*, identified key challenges—equity, access including waiting lists, efficiency, morale, and a range of “management deficiencies”.¹

Most countries are grappling with similar workforce, service demand and funding challenges.² The COVID-19 pandemic accelerated or amplified them,³ even in New Zealand where our health system escaped the worst of the pandemic's impacts.⁴ The fundamental driver of these challenges is ageing populations, with the associated rise in the burden of non-communicable diseases (age being the strongest risk factor for cardiovascular disease, cancers and diabetes) and frailty with its complex and resource-intensive clinical and care needs.⁵ Compounding this is a proportionately smaller labour force available to provide the tax base needed to fund and staff services.

Structural solutions are often seen and portrayed

as the principal solution to these challenges. However, structural change tends to overlook the deep complexity of health systems and seldom delivers the promised improvements, not least because the substantial disruption they cause often leads to a drop in performance in the short to medium term.⁶

Structural solutions in New Zealand are not new. Returning to the 1988 Gibbs report:

“Our recommendations relate largely to changes in structure. We believe that the structure we have developed, which separates the roles of funder and provider... In the improved environment that should develop from this independence, we expect many dynamic, creative and unforeseeable adaptations to take place.”¹

Our view is that this is a critical juncture to seriously consider the health system leadership that is needed if we are to address the challenges effectively. This is based on our combined experience in health leadership roles over many years, the evidence that informs our own leadership

practice and the outcomes of a focus on leaders and leadership at the former Hutt Valley District Health Board (DHB). This paper summarises the key elements of that DHB experience and draws out lessons for effective leadership of health-care organisations and the health system in New Zealand.

The Hutt DHB experience

Hutt Hospital was previously part of the Hutt DHB and was incorporated into Health New Zealand – Te Whatu Ora in mid-2022. The hospital provides secondary healthcare services for approximately 160,000 people in the Hutt Valley and, for a few services, the greater Wellington Region and lower North Island.

In mid-2015, the wider organisational culture was strong, but some services were having difficulties, including the emergency department (ED). We commissioned an external review of the ED to identify actions to improve performance.

Response to the ED review

The review identified various issues and provided recommendations to improve the culture, staffing, efficiency and clinical processes in the ED.⁷ These recommendations were largely accepted and an implementation programme started. The response also included actions to shape the wider organisational culture, values and leadership capability as described below.

The ED reviewers also reported behaviours in the department that some staff members described as “bullying”. They reported this separately to the chief medical officer (CMO) who promptly spoke with the individuals concerned, with varying responses; the issues were resolved within a short period. This prompt action was essential as the need to address the unhealthy culture of the ED was a key finding of the reviewers.

Wider organisational actions

Concurrently, there was a significant focus on strengthening the organisational culture with all staff through an organisation-wide culture and values process. This had very wide engagement and input was sought from service users and whānau and community providers. This exercise started with finding out from staff what was the most important ingredient for a good day at work.

There was resounding support for “positivity” being key—and, conversely, “negativity” was most widely cited as leading to a bad day at work.

Organisational values were developed collaboratively by the staff through an iterative process and were not “imposed” by the leaders; they were then used as a basis for strengthening organisational culture. Senior clinical leaders also openly shared their ambition for Hutt becoming the best secondary hospital in New Zealand.

Once the values were agreed, they provided the “benchmark” for the staff behaviours—both desirable and undesirable—that supported those values, and staff members were equipped with tools to address behaviours that didn’t align with the values expected. The values were also used as part of appointment processes to help ensure potential new employees understood the organisational culture and behaviour expectations, and to assess organisational “fit”. As a result, some applicants who had the qualifications and relevant experience were not employed because the interview panel was not comfortable there was a good fit with the organisation’s values and culture.

Senior medical officers (SMOs) play an important role in hospitals in modelling the values: they are influential, in positions of relative power and set an example for others—in particular, postgraduate doctors and trainees. Given this, the CMO was involved in the appointment process of all SMOs, with a particular focus on organisational fit.

The DHB also approved the establishment and “ring fencing” of a NZ\$1m improvement fund, even while the overall DHB budget was in deficit, and support from project managers for small innovation and improvement projects. A group of hospital and community clinicians, convened as a clinical council, assessed and approved proposals. This fund gave “agency” to clinical teams, which were empowered to make changes, and created an opportunity for focus and meaningful action.

The initiative was well received as it conveyed that clinical improvement initiatives were valued and that changes in clinical practice were for improvement rather than being “mandated”. Clinicians were also able to access improvement training to help them identify and act on opportunities.

Collective leadership training

The executive team also approved funding for

leadership training for people in senior clinical roles and aspiring clinical leaders. The most senior clinical leaders committed to doing the training and encouraged—and created the expectation for—others to participate.

The initial training was planned for up to 25 SMOs in leadership roles, but became a cross-directorate, multidisciplinary leadership course involving medical, nursing and allied health leaders. As it transpired (arguably predictably), this made the training even more worthwhile as it developed and strengthened relationships across the organisation and between professional groups. This approach was taken with subsequent courses, which also included senior operational managers, many of whom came from a clinical background, and primary care clinical leaders.

The training was 7 full days spread out over a few months and the time to attend was protected and paid. Between these sessions small inter-professional peer groups were formed, and the participants met to discuss their “homework” and support each other. These groups continued well past the finish of the training. Memorably, after the first day of training, a senior medical leader who was nearing retirement commented, “*I wish I had done this 20 years ago*”. The uplift in clinical leadership was palpable and great camaraderie was created between clinical leaders and service managers, and between services. This created a downstream chain reaction, notably through the establishment of collaborative relationships between clinical teams to deliver more patient-focussed care. We observed a number of “magical moments” of collaborative patient care.

Building on this training, we held quarterly meetings with all senior clinical and non-clinical leaders, including primary care leaders, to strengthen our collective leadership as a team. At each meeting, we would reflect on the last 3 months, identify what had gone well and what needed work, and agree on priorities for the next period.

Multiple supporting actions were initiated with executive sponsorship, including rolling out the Choosing Wisely programme, reshaping clinical pathways to improve patient care and developing peer support networks. There was wide engagement of staff in these activities. Several forums were created for staff to meet with executives to address staff concerns and improve patient care.

Outcomes

Shortly after the initial review of the ED, and

before significant changes had been implemented, the Australasian College of Emergency Medicine (ACEM) undertook a planned review and, as a result, withdrew accreditation for registrar training.

The 2017 ACEM report (1 year after losing training accreditation) noted a substantial positive change in the morale of the trainees and specialists who were interviewed compared with the original 2016 assessment.⁸ There was general optimism and confidence in the hospital executive, which was attributed to the changes that were made over the last year, including additional specialist staffing and the appointment of a Fellow of the Australasian College of Emergency Medicine (FACEM) as co-director of the department.

The next ACEM review in 2020 stated, “*It is very pleasing for the inspection team to note the positive and upbeat vibe in the ED*”.⁹ The review noted that a director of emergency medicine (DEM) had been appointed since the last inspection and that the DEM and her leadership team, with strong support from the CMO, had brought about a significant culture change that had transformed the ED and impacted positively on the wider hospital. The increase in FACEMs included a new younger cohort that had re-energised the SMO group. Behaviour that was inconsistent with the organisation’s values had been “called out” and the review noted a hospital-wide focus on prioritising education and training alongside service provision. The review concluded that these developments addressed many of the concerns identified in the previous inspections.

Importantly, the changes have endured; experienced clinicians coming into the organisation have commented on the strength of the culture and relationships. Many of the current senior registrars in emergency medicine have indicated that Hutt is their preferred place to work as an SMO because of the positive culture and collaboration between the ED and other departments. An SMO from another DHB indicated that Hutt Hospital has become one of the preferred departments to work because of the strong departmental culture and collaboration with other specialities.

Discussion

Management “guru”, the late Peter Drucker, described hospitals as the most complex human organisation ever devised.¹⁰ Nearly 50 years later, they are more complex and present a demanding work environment for staff and a unique leadership

and management challenge. In addition, hospitals are just one part of an even more complex system.

In such complexity, trust and relationships are key to creating an environment that delivers high-quality and equitable care, ensures resources are managed well and is rewarding for staff. The latter is important: working in health needs to be both rewarded and rewarding, so staff have agency and enjoy or “feel joy” at work. A key part of this is staff safety and wellbeing being prioritised alongside patient safety and outcomes—the two are closely linked.

Organisational culture and values need to align as much as possible with the personal and professional values of staff members. An organisational culture and values exercise helps to ensure such alignment, strengthening relationships and generating a sense of camaraderie—“we’re all in this together”.

An important part of this is addressing behaviours that undermine the organisation’s values and a positive work environment. The central pillar of good leadership is “leading self” through having an active awareness of the impact of one’s behaviours on others.

Proactively addressing negative behaviours is essential. Some people are simply unaware of the impact of their behaviour on others and are genuinely shocked when they find out. Others may be aware but have “got away with it” for so long that there is no incentive to change. Making it clear that a line has been drawn is sufficient for most people to moderate their behaviour. Others make their own decision if they don’t agree with the line and where it has been drawn.

The changes described in the case study require a deliberate and transformational—rather than transactional—approach. At the time, we were not aware of, or driven by, any specific leadership theory; rather, we considered actions that would motivate people, strengthen and empower leadership at different levels, develop a strong values-based culture and provide opportunities for innovation.

However, as we considered the factors that contributed to our success, it became clear that the approach we took was consistent with transformational leadership described by Bass.¹¹ Transformational leadership occurs where the leader can inspire others to the extent that they perform beyond expectations and apply significant discretionary effort.¹¹ This model of transformational leadership identifies four dimensions: idealised influence, individualised

consideration, inspirational motivation and intellectual stimulation. The transformational leader is described as one who creates an organisational culture that converges the leader and their followers towards mutual “bar-raising” and stimulating greater productivity that could not have been achieved solely through transactional leadership.

There are examples of the impact of successful transformational change in healthcare. A detailed examination of four case studies from the United States of America, United Kingdom and Australia acknowledged that transformational change is difficult and complex, particularly in systems providing essential services, such as health in which people are understandably risk averse.¹² However, the four case studies also showed success is possible, with common factors underpinning this: a well-communicated vision, innovative redesign, extensive consultation and engagement with staff and patients, performance management, automated information management and—notably—high-quality leadership.

We also consider kindness as a key pillar of effective transformational and values-based leadership. A key recent publication emphasises the importance of the leading with kindness and taking a systematic approach to addressing the determinants of staff subjective wellbeing and healthspan.¹³ Kindness is defined in this context as “*helping people do better*”, and “kind organisations” have systems in place to do this by engendering agency (control over work–life), collective effervescence, (meaning energy and harmony in groups of people with shared purpose), camaraderie (social connectedness) and positivity (optimism and caring). Kindness is not the same as “niceness”, and sometimes requires courageous conversations with people about the negative impact of their behaviours, noting that this can and should be done in a way that helps them to do better.

Addressing health system challenges and transforming organisations is enabled by equipping people with leadership skills and providing ongoing support for them to lead successfully. Many healthcare leaders, both clinical and non-clinical, do not receive even basic leadership training and ongoing development as leaders, yet their behaviours set the culture and tone of the organisation.

Leadership training is generally more effective and enduring if it takes place with groups of people in their workplace as it fosters a shared understanding, strengthens relationships and promotes practical application of learned skills. We found that involving local health system leaders, e.g.,

from primary care, provides significant additional value.

Right now, New Zealand's health system needs transformational leaders who are values-based, engage with and support staff and convey hope and a strong sense of purpose. They need to be transparent, insightful, trustworthy, compassionate and authentic. Developing and improving such skills takes time and training, which requires investment. Our experience is that even a modest investment reaps large dividends.

Conclusion

Leadership in the healthcare system is challenging

every day—a key task is remaining positive and conveying a sense of hope. People working in the system know it is tough (it is their daily reality) but they are smart, deeply committed, innovative and want to make a difference. Our experience is that those working in health have amazing fortitude despite the constant challenges, setbacks and frustrations—because they know their work makes a difference and it only takes small wins to make it all worthwhile. Healthcare leaders need and deserve strong support to lead effectively. A focus on this is essential if New Zealand is to successfully address health system challenges, both old and emerging.

COMPETING INTERESTS

Nil.

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Spontaneous closure and later recurrence of a macular hole requiring vitrectomy

QuanLe Li, Francesc March de Ribot

This report presents a recurrent macular hole (MH) that initially closed spontaneously but reopened 4 years later due to partial vitreous traction, requiring pars plana vitrectomy (PPV) with internal limiting membrane (ILM) peel and gas tamponade to obtain a final closure.

An MH is a vitreoretinal interface disorder characterised by a full-thickness defect in the foveal region of the retina, leading to central vision loss, metamorphopsia and reduced visual acuity (VA). The development of MH is mainly idiopathic and associated with age-related vitreomacular traction (VMT). Idiopathic MH can be classified into four stages: stage one involves foveal detachment with a minor partial-thickness defect, stage two represents early MH formation, stage three is a fully developed MH with persistent vitreofoveal attachment, and stage four is MH with complete posterior vitreous detachment (PVD).¹ Although spontaneous closure is possible, MH at stage two and beyond mainly require surgery.² During PPV, the vitreous gel is removed to relieve traction on the macula. The ILM peel helps release further traction and promotes MH closure by stimulating the retina to flatten and heal. Gas is used to temporarily tamponade the macula, allowing the edges of the hole to approximate, supporting its closure and recovery.

Case

A male in his 70s presented with a 4-week history of VA loss in the left eye (LE) and central metamorphopsia. The VA in the right eye (RE) was 6/9; in the LE, it was 6/36, improving to 6/18 with a pinhole. Upon examination, the cornea was clear, with moderate cataracts. The retina in the RE showed preserved morphology, while the LE revealed an MH with a horizontal diameter of 216µm at its narrowest point, with VMT and a bridge (Figure 1). A diagnosis of idiopathic MH was made, and the patient was waitlisted for PPV surgery.

The MH closed spontaneously 1 month later, improving VA to 6/12 and 6/7 over the next 3 months (Figure 2). However, 4 years and 6 months later, the patient presented with VA loss in LE due to the recurrence of a large MH with a horizontal diameter of 410µm at its narrowest point (Figure 3).

A combined procedure was performed, including phacoemulsification, intraocular lens insertion and 25-gauge PPV with peel and gas. Peripheral vitreous detachment (PVD) was induced with an inverted ILM flap and using 15% C3F8 gas as the endotamponade. The patient was instructed to maintain a face-down position for 3 days, followed by routine post-operative treatment with Chlorafast 4 times a day for 1 week and Pred Forte 4 times a day for 1 month. In the follow-up, VA improved to 6/24, and optical coherence tomography (OCT) confirmed MH closure. The patient returned to normal daily activities and remains healthy with regular eye examinations.

Discussion

Although uncommon, spontaneous closure of an MH has been reported, particularly in small or early-stage MH,^{2,3} with contributing factors including retinal bridges, VMT or epiretinal membranes.⁴ Approximately 25% of small idiopathic full-thickness MH with a diameter ≤250µm and around 55% of MH with diameters <150µm can close spontaneously within 2 months of diagnosis.⁵ The formation of retinal bridges via glial cells, most likely Müller cells, is the most widely supported mechanism required for MH closure.⁶

In this case, the MH resolved spontaneously, identifying the presence of retinal bridges, but it recurred with a significant diameter increase, necessitating a surgical intervention. The inverted ILM flap technique, combined with PPV, uses the ILM covering over the MH as a scaffold for Müller cell proliferation and aids in hole closure.⁷ This approach further improves both functional and anatomic outcomes, particularly for larger MH

>400 μ m.⁸ Surgical intervention grants success rates from 90% to 100%,⁹ though outcomes vary depending on individual case characteristics. The MH's onset, type and stage are key prognostic factors.^{9,10}

This case highlights the implication of retinal

bridges in MH spontaneous closure, but with the possibility of recurrence for persistent VMT. The presence of a large MH with significant traction is unlikely to resolve spontaneously, requiring surgical intervention.

Figure 1: Macular optical coherence tomography (OCT) of macular hole presentation. The macular hole had a horizontal diameter at the narrowest point of 216 μ m with the presence of vitreomacular traction and a bridge.

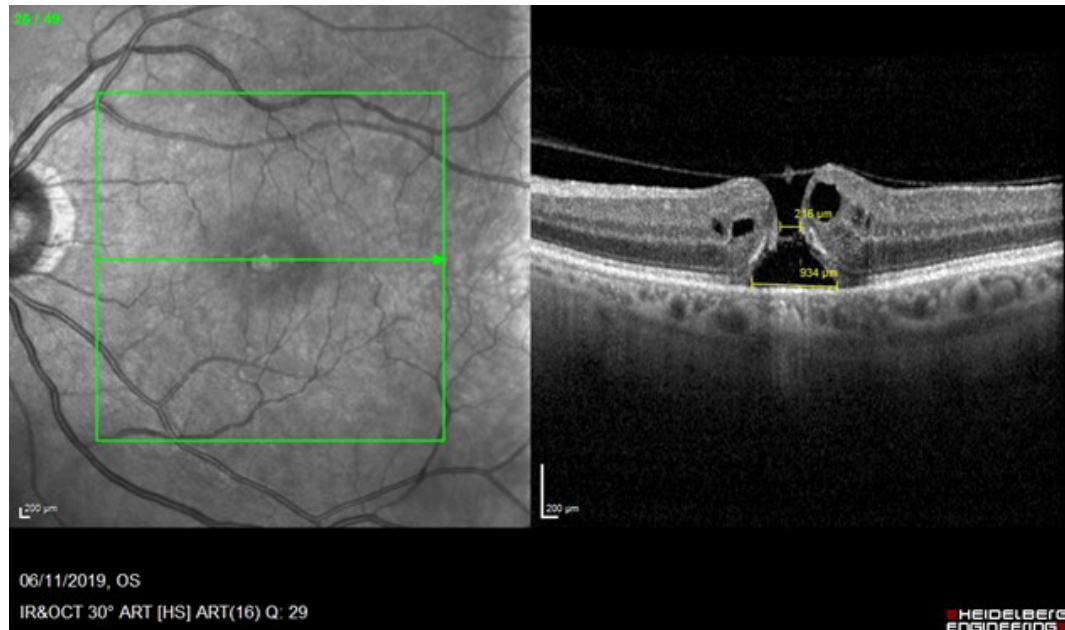


Figure 2: Macular OCT of macular hole resolution. The traction releases at the central part.

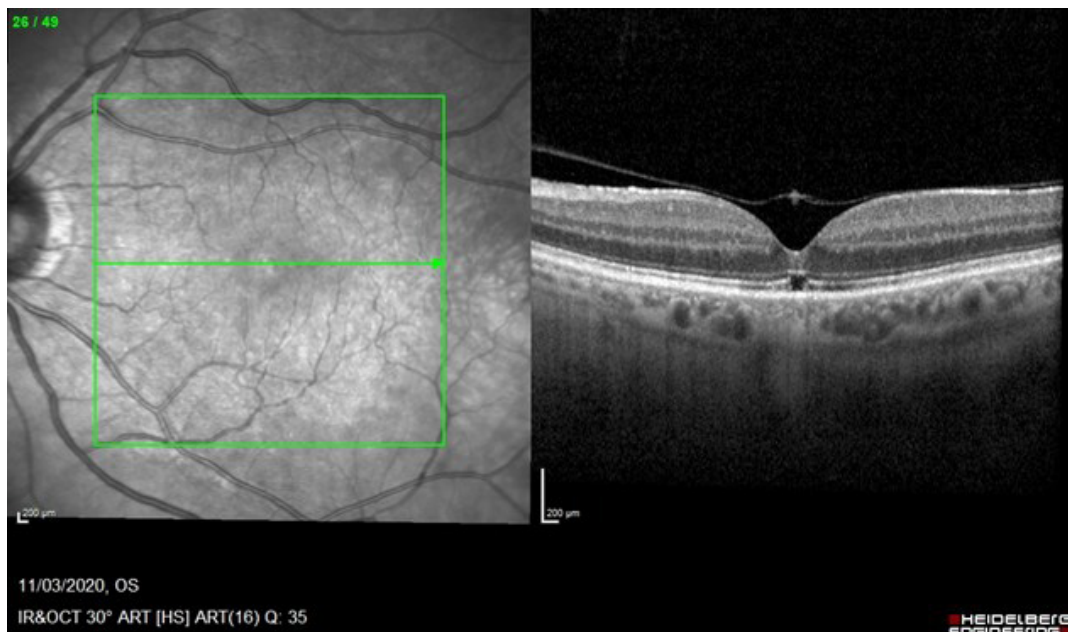
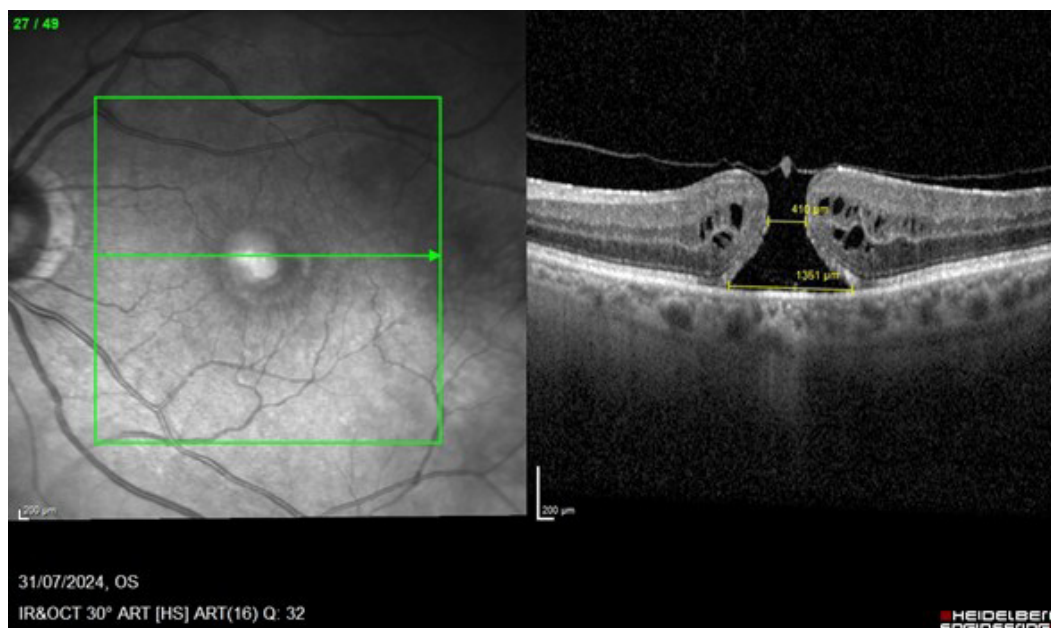


Figure 3: Macular OCT of macular hole with a re-aperture. The macular hole had a horizontal diameter at the narrowest point of 410µm with the presence of vitreomacular traction and without a clear bridge.



COMPETING INTERESTS

Nil.

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Definitive treatment of cholecystitis via cystic artery pseudoaneurysm embolisation

Li Ning Yong, Edmund Leung

Cystic artery pseudoaneurysm is a rare vascular complication that typically arises secondary to regional inflammation, trauma or, less commonly, idiopathic causes. It can lead to a life-threatening haemorrhage, making emergent intervention always mandated. The endovascular technique is minimally invasive but requires a good skillset and availability of expertise. This case report describes how a rare condition was successfully treated using this technique, leading to the definitive resolution of its cause: cholecystitis. There is no known published case in the literature demonstrating cystic artery embolisation resulting in the complete dissolution of the gallbladder that required no further planned cholecystectomy.

Clinical case

A 52-year-old Chinese male with no previous comorbidities presented to the emergency department of a rural hospital with a 3-day history of severe abdominal pain in the right upper quadrant. He was tachycardic and slightly

hypotensive but responsive to intravenous fluid resuscitation. Tenderness was confirmed on examination without peritonism. Initial tests were consistent with anaemia (Hb 88g/L), neutrophilia ($8.1 \times 10^9/L$), and cholestasis (ALP 240 U/L, GGT 120 U/L, Bilirubin 26 mmol/L). The patient had reported no rectal blood loss or melaena. Rectal examination, however, showed possible melaena on the gloved finger.

As the patient became haemodynamically stable, prompt computed tomography (CT) of the abdomen identified a large gallbladder haematoma with a central pseudoaneurysm arising from the cystic artery and emphysematous cholecystitis (Figure 1). Antibiotics and 1 unit of red cells were administered. Discussions surrounding immediate laparotomy against endovascular intervention were held. Given continued haemodynamic stability, a helicopter was summoned to transfer the patient to the city for endovascular embolisation.

Access was obtained through the right femoral artery and the cystic artery pseudoaneurysm was embolised using glue and Lipiodol in a 1:2

Figure 1: Preoperative abdominal CT with contrast shows emphysematous cholecystitis, large gallbladder haematoma and a central pseudoaneurysm arising from the cystic artery.

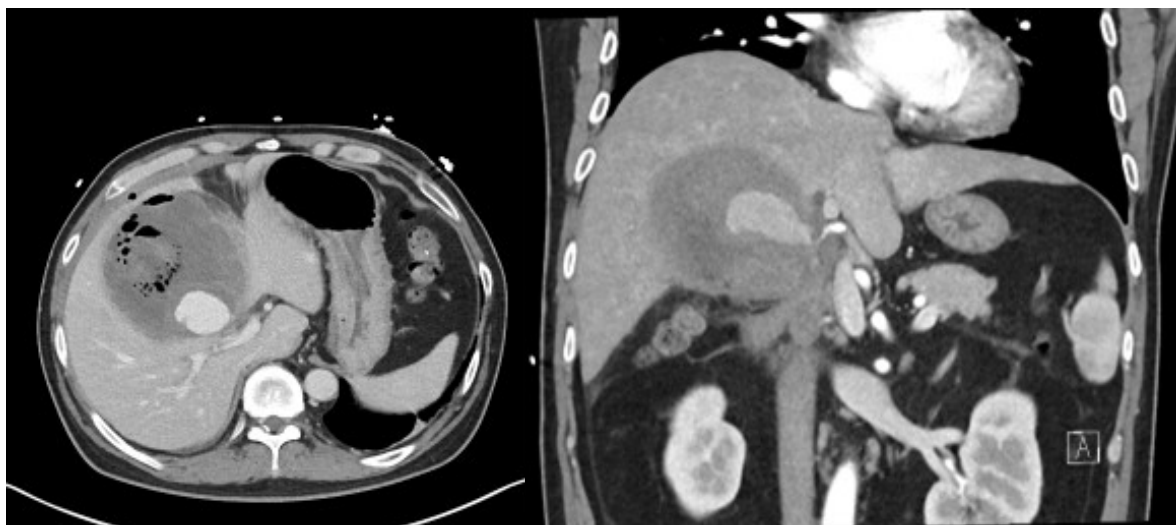
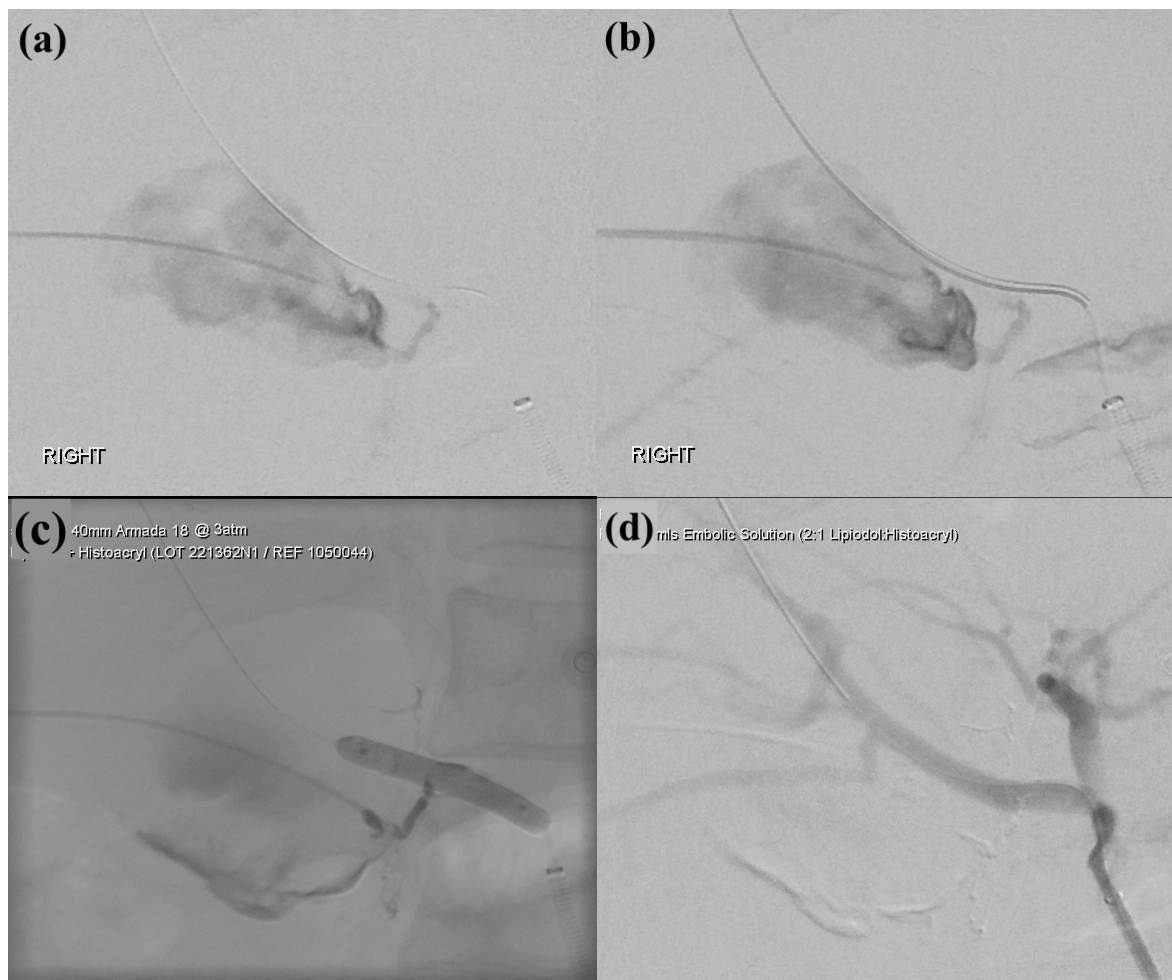


Figure 2: (2a, 2b) Angiographic imaging of cystic artery pseudoaneurysm and post-embolisation outcome. (2c, 2d) Post-embolisation angiography demonstrating successful occlusion.



ratio (Figure 2). Recovery was uneventful with resolving inflammatory markers and liver function tests. The patient was transferred back to the rural hospital for completion of antibiotics and recovery.

A follow-up CT, 2 months later, confirmed the complete resolution of the pseudoaneurysm and almost complete resolution of the pericholecystic inflammation (Figure 3). A subsequent ultrasound 4 months on showed no evidence of gallbladder, where it was assumed to be shrunk to a fibrotic scarred mass (Figure 4). The patient has remained asymptomatic to date since discharge from the hospital. An elective cholecystectomy was not planned.

Discussion

Cystic artery pseudoaneurysm is a rare vascular complication with few cases reported in litera-

ture.¹ Its presentation can be vague, requiring a high degree of suspicion for prompt diagnosis and management. The underlying pathophysiology is unclear, but likely to be the result of regional inflammation, trauma or idiopathic causes. Inflammation from cholecystitis can cause damage to the vessel adventitia, weakening the elastic and muscular arterial wall to form a pseudoaneurysm.² Biliary interventions such as cholecystectomy can also weaken the arterial layers, through physical manipulation, thermal injury or the presence of a nearby metallic clip.¹ Other patient comorbidities such as atherosclerosis, hypertension, diabetes or vasculitis may have a contributory role in the formation of pseudoaneurysms.³ A literature review of 67 cases found that a majority of cystic artery pseudoaneurysms were secondary to cholecystitis (61.2%), followed by cholecystectomy (26.8%).¹ Complications associated with cystic artery pseudoaneurysm include haemobilia,

Figure 3: Post-embolisation abdominal CT with contrast shows complete resolution of pseudoaneurysm and almost complete resolution of the pericholecystic inflammation.



Figure 4: Post-embolisation ultrasound shows no evidence of gallbladder.



biliary obstruction and anaemia.¹ It can be fatal, with an estimated mortality rate of up to 50% due to severe complications of haemorrhage, hemo-peritoneum and haemodynamic shock.² As such, prompt diagnosis and management are required to reduce the risk of rupture and bleeding.

The most common clinical presentation is haemobilia, which can be described through Quincke's triad. This presents as jaundice in 60% of cases, right upper quadrant pain in 70% of cases and upper gastrointestinal bleeding in 45% of cases, with 32–40% of patients presenting with

all three symptoms.^{2,3}

In the acute setting, a duplex doppler ultrasound can be used to diagnose a cystic artery pseudoaneurysm. This is demonstrated by an anechoic or typical yin-yang symbol (swirling flow) adjacent to the damaged artery, which can also be measured for its size and neck.^{4–6} There may also be hyper-echoic fluid in the gallbladder if the pseudoaneurysm has ruptured.⁴ This imaging modality is cost-effective and readily available, but the image quality can be highly dependent on the user's skill and experience.⁶ Low sensitivity has also been

reported with ultrasound, specifically with smaller lesions.² The acoustic shadow of gallbladder calculi can also obscure pseudoaneurysms in this modality.²

Alternatively, a contrast-enhanced CT can be performed, which displays a pseudoaneurysm as a well-circumscribed, high attenuation nodule.⁶ Complications such as rupture can be identified through high attenuation adjacent to the pseudoaneurysm, and intracholecystic haemorrhage can be identified through heterogeneous high attenuation in the gallbladder.^{2,5} Visualisation of the aneurysm and its neck can also be seen from various angles through this method using multiplanar reconstruction.⁶ Triple-phase CT angiography has the added benefit of identifying vasculature and planning percutaneous treatment.^{2,4} This method also allows for multi-organ screening and can help to determine the cause of the pseudoaneurysm.^{5,6} It is also not dependent on the user, and images are quickly produced over a few minutes. However, it may not be a suitable option for patients in whom contrast usage is contraindicated.⁶

Conventional angiography is sometimes considered the gold standard, with a sensitivity of 80% and the ability to detect pseudoaneurysms less than 10mm.² This procedure can also be combined with interventional embolisation for management.^{2,6} The downside is its invasive nature, which is associated with procedural risks such as haematomas, ischaemia and thrombosis.⁶

The management of cystic artery pseudoaneurysm is best done endovascularly, via embolisation or the placement of a stent, which has a high likelihood of achieving haemostasis and clearance of the aneurysm.^{1,2} Its minimally invasive nature helps to enhance patient recovery. Such a technique requires experience and a good skillset. In many rural hospitals, this service is often unavailable. Embolisation agents include coils, detachable balloons, glue or gel-foam. Coils are often preferred due to their ability to target a variety of vessel sizes, and have a lower risk of increasing the pressure in the vascular lesion as compared to gel-foam and glue.⁶ This method is also preferred in high-risk surgical patients who may be haemodynamically unstable and septic, as it controls active bleeding and allows ample opportunity for resuscitation.^{6,7} While gallbladder ischaemia and necrosis is commonly described in the literature as a potential risk of embolisation, its incidence is unclear. A review of 59 cases identified no patients who suffered this complication, including

two patients who underwent exploration for suspected gangrenous gallbladder that found no evidence of ischaemia.⁷ If embolisation is unsuccessful, vessel ligation of the cystic artery could be indicated.¹ Following embolisation, a staged cholecystectomy is commonly arranged, alongside the removal of the pseudoaneurysm or biliary drainage.² Literature suggests, however, that embolisation alone could suffice as the sole management, particularly in older patients with higher surgical risks.⁷ However, the management of choice continues to remain controversial, with some authors suggesting that cholecystectomy should be the definitive management for cystic artery pseudoaneurysms arising from cholecystitis.^{1,7} Our decision to defer surgery was supported by the patient's clinical resolution and imaging findings, providing evidence against the notion that cholecystectomy is always necessary in such cases. It also challenges the widely held concern that embolisation of the gallbladder's principal arterial supply would inevitably result in clinically significant ischaemic injury.

This case is unique as there are no prior reports, to our knowledge, of cystic artery embolisation resulting in the complete atrophy of the gallbladder without the need for surgical intervention. The inflammatory process from emphysematous cholecystitis is likely a contributory factor, resulting in the accumulation of fibroblasts and myofibroblasts in the tissue and eventual fibrosis.⁸ Combined with arterial embolisation, the pre-existing ischaemia was likely exacerbated, further promoting fibroblast activation and myofibroblast proliferation. This pathophysiological process, while well described in other ischaemic conditions, has not previously been reported in the context of cystic artery pseudoaneurysm embolisation.

Conclusion

Cystic artery pseudoaneurysm is a rare complication of cholecystitis. It requires a high index of suspicion, particularly in patients presenting with jaundice, shock and right upper quadrant pain. Imaging options such as ultrasound, contrast-enhanced CT and conventional angiography provide diagnostic capabilities. While there is no consensus on definitive management, endovascular embolisation has emerged as a safe and effective first-line treatment, especially in high-risk patients.

COMPETING INTERESTS

No sources of funding or conflicts of interest to declare.

PATIENT CONSENT

Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

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Unicuspid aortic valve with ascending aortic aneurysm: a rare cause of heart failure in a middle-aged male

Mona Alsomali

A 51-year-old European male with a history of hypertension presented with a 3-week history of progressive exertional dyspnoea, orthopnoea and paroxysmal nocturnal dyspnoea. There was no chest pain, smoking or relevant family history. Examination revealed a blood pressure rate of 220/160mmHg, a heart rate of 110bpm, jugular venous distension, diastolic murmur, basal crackles and peripheral oedema.

Investigations showed left ventricular hypertrophy on ECG and pulmonary oedema on chest X-ray. Troponin I was mildly elevated (49–51nmol/L), and NT-proBNP was 1823pmol/L. Transthoracic echocardiogram (TTE) revealed a mildly dilated left ventricle (5.6cm), severe global dysfunction (LVEF 24%), unicuspid aortic valve (UAV) with

moderate-to-severe stenosis (AVA 1.1cm², mean gradient 19mmHg, velocity 3.1 m/s, DVI 0.26) and moderate regurgitation. Ascending aorta was dilated (53mm). Pulmonary artery systolic pressure was estimated at 60–65mmHg.

He was treated with intravenous furosemide, fluid restriction and heart failure medications including spironolactone, perindopril and metoprolol. Coronary angiography was normal. Right heart catheterisation revealed mean RA pressure of 2mmHg, mean PA pressure of 23mmHg, and PCWP of 11mmHg. After 2 weeks of optimisation, cardiac MRI showed improvement in LVEF to 34% and aortic regurgitant fraction of 16%. A computed tomography (CT) confirmed ascending aortic aneurysm and UAV.

Figure 1: Cardiac magnetic resonance imaging of unicuspid aortic valve with ascending aorta dilatation.

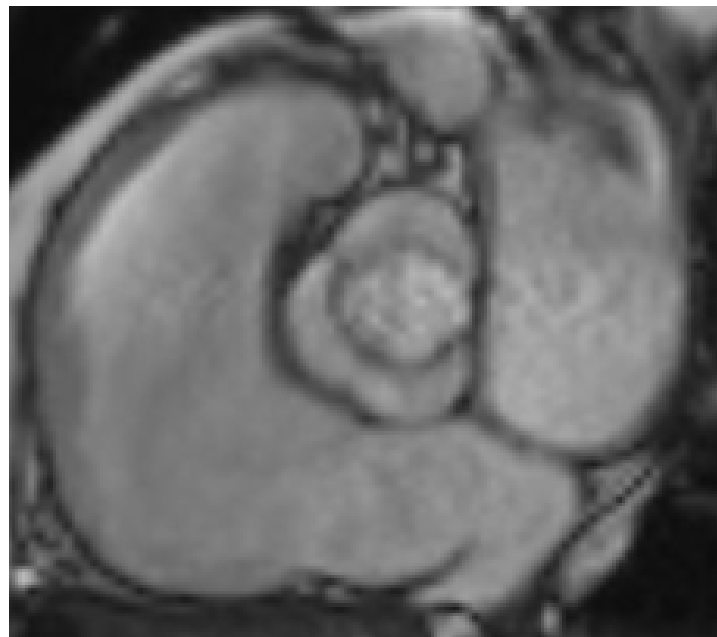


Figure 2: Computer tomography of the unicuspid aortic valve with ascending aorta dilatation.



The patient underwent a successful Bentall procedure with the placement of a 21mm On-X mechanical valve conduit. His post-operative recovery was uneventful. A follow-up TTE showed the prosthetic valve *in situ* with LVEF improved to 45–50%. He was discharged on day 10.

UAV is an exceptionally rare congenital anomaly, affecting approximately 0.02% of adults, but is found in 4–5% of patients undergoing surgery for isolated aortic stenosis. It results from incomplete separation of aortic valve cusps during embryogenesis. UAV exists in two forms: acommissural (severe stenosis early in life) and unicommissural (asymptomatic until the third to

fifth decades). UAV is more common in males and is associated with aortic aneurysm, dissection and regurgitation.

Diagnosis relies on imaging, with TTE and cardiac MRI playing key roles. The hallmark of UAV on imaging is a teardrop-shaped systolic orifice. Treatment is surgical, with guidelines recommending aortic root replacement if the ascending aorta exceeds 5.0cm in diameter.

This case highlights the importance of recognising rare congenital causes of heart failure in middle-aged adults and the need for timely surgical intervention to prevent life-threatening complications.

COMPETING INTERESTS

Nil.

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Time to make CPR and first aid training compulsory in New Zealand schools

Clive Solomon

Every year in New Zealand, thousands of people experience sudden cardiac arrest outside hospital. Survival depends almost entirely on the speed and confidence of bystanders. Yet far too often help comes too late. Too many New Zealanders watch helplessly while lives are lost, simply because they never had the chance to learn even the most basic skills of cardiopulmonary resuscitation (CPR) or first aid.

This need not be the case. These are not complicated medical procedures reserved for professionals—they are straightforward, teachable actions that can be performed by anyone. If every teenager left school already knowing what to do, the impact would be immediate and measurable.

Why schools? Schools are the one environment that touches every young New Zealander, regardless of background, location or family circumstance. Introducing compulsory CPR and first aid training from the age of 14, with annual refreshers, would ensure that by the time they graduate, every student carries these essential life-saving skills. The training need not be elaborate or time-consuming. One or two sessions a year, reinforced annually, would suffice.

It is practical, affordable and achievable. The cost is minimal compared to the enormous benefit. Providers such as Hato Hone St John and the Red Cross already have the capacity and expertise to deliver such programmes.

International precedents

New Zealand has a proud tradition of leading social change, from granting women the vote in 1893 to public health initiatives that set global standards. Yet in this area we are falling behind.

- In Denmark, mandatory CPR training was introduced in schools in 2005. Within a decade, survival from out-of-hospital cardiac arrest tripled.^{1,2}
- In Norway, CPR is compulsory both in

schools and as part of obtaining a driver's licence, resulting in near-universal CPR familiarity.³

- In the United Kingdom, first aid (including CPR) became compulsory in the national curriculum in 2020.⁴
- France, Belgium, Italy and Portugal have also mandated school-based training.⁵
- In the United States, more than 38 states and Washington DC require CPR training for high school graduation, with millions of students trained every year.⁶

The results speak for themselves: where training is mandatory, more lives are saved.

Why New Zealand must act

In New Zealand, bystander CPR rates remain too low, and survival rates from sudden cardiac arrest remain poor compared with countries that have adopted compulsory training. Every day that passes without action represents more preventable deaths.

This is not an abstract problem. It is an everyday reality—cardiac arrests happen in schools, on sports fields, at workplaces, in homes. They happen to friends, parents and children. When they do, the single most important factor is whether someone nearby knows what to do.

Some will argue that curriculum time is too tight, or that the cost is prohibitive. But 1 hour per year is not an extravagance—it is a necessity. It is less than the time spent on many optional activities, and the value of that hour may be the preservation of a human life.

Call to action

The solution is clear: integrate compulsory CPR and first aid training into the school curriculum from age 14, reinforced with yearly refreshers.

Within 5 years every young adult leaving

school would be equipped to save lives.

If we fail to act, New Zealand will continue to lose lives unnecessarily, likely on a daily basis. If we succeed, we will build a generation of

confident, competent citizens who know how to step forward in a crisis.

New Zealand has the chance to lead again. We should seize it.

COMPETING INTERESTS

Nil.

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The problem with ten-year private healthcare contracts

Phil Bagshaw, John D Potter, Sue Bagshaw

In a democracy, the people/tāngata support parties and policies and thus provide the resulting government with power. The advantage of a government with power, supported both by votes and taxes, is that it can take responsible actions on behalf of all and provide services efficiently—e.g., education, healthcare, border security—that are much harder, even impossible, for smaller units of the community to provide for themselves. This is the heart of the social contract.¹

Poorly functioning, neglectful or incompetent governments ignore the two-way nature of this arrangement: they accept the power *from* tāngata but do not use it *for* tāngata. Such governments begin to dismember the difficult services, perhaps believing that everything should pay for itself, even make a profit, or maybe just not wanting to do the hard maintenance work needed.

The particular advantage of dismembering healthcare is that there are some parts of hospital care that allow those in private business to make low-risk, large and rapid profits.² If the government is under the delusion that private healthcare is more efficient than public institutions in delivering hospital care, this just adds weight to the justification for their decision.³

Hence, the 10-year contracts the Aotearoa New

Zealand Government is currently proposing.⁴

Other parts—the urgent cases, complex disease management, hospital care needing multidisciplinary teams, training specialists^{5,6}—are not easy to sell off as it is far harder to make the kind of profit that the routine can provide. So, these are necessarily kept in the public sphere. When they are poorly financed, they slowly decay. The health of tāngata goes downhill and the health/life expectancy gap between Māori (as well as Pacific people and the poor) and the rest of us continues to grow.⁷

As the healthcare system plummets towards the most expensive, least efficient and most unequal, it will begin to look more and more like the United States of America (USA), but will actually be worse, because there university-affiliated full-service hospitals provide medical training and do research.⁸ We have no comparable institutions in Aotearoa New Zealand. So, we will be expensive, inefficient and unequal and we will be even more dysfunctional than the USA.

The authors of this letter call for an uncomplicated government guarantee of free access to hospital healthcare for all of us as a collective moral imperative and an individual legal right. We ask all healthcare workers in Aotearoa New Zealand to join us in this call.

COMPETING INTERESTS

Nil.

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The New Zealand Medical School

NZMJ, 1925

The speeches delivered at the ceremony in connection with the laying of the foundation stones of the new building for the Medical School on 18th June, 1925, must have impressed afresh all who heard them with a sense of the importance of the standing of this institution in the community, and of the greater future that lies before it. The fact that the present requirements of the School include a building costing over £50,000 to erect, and an expenditure of at least £100,000 before it can be occupied, is itself sufficiently eloquent of growth and progress, even without the reinforcement of the instructive particulars supplied by the Chancellor of the University respecting the history of the School since the time of its inception. Mr. Sidey's claim, advanced in no spirit of undue pride, that the Otago Medical School has grown to be "a great national institution" was, in the circumstances to which he was able to point, no more than a

logical and just conclusion. And the stone-laying ceremony may be regarded as establishing the conclusion once and for all, beyond possibility of cavil. The address delivered by the Minister of Education was of special interest by virtue of his ready endorsement of the propriety of the Chancellor's claim. In agreeing that the Medical School is not merely an Otago institution, but belongs to New Zealand, Sir James Parr observed, not without an appreciation of the humour of the situation, that this was a very serious admission to come from "a confirmed and parochial Auckland like himself." But the admission comes not the less gracefully on that account, with its backing of inevitability in Ministerial concession that the impossibility of the Government financing two medical schools in the country at the present time must be acknowledged. "It will take the Government all its time to finance one Medical School."—*Otago Daily Times*.